

NATURE – BASED TOURISM

A community ecological and socio-economic development planning approach

A Case Study of Goba Area, Maputo – Mozambique

Samuel João Soto



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University of Stellenbosch

Supervisors : Mr. David Pepler
: Prof. Sue J. Milton

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Declaration

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

Abstract

The ongoing environmental destruction that results from the continuous use of the woodland resources for economic purposes has caused extensive changes in the original vegetation of Goba area of southern Mozambique. Developing alternative sources of income for communities can reduce their dependence on the production of charcoal, building materials and wood carvings. The lack of infrastructure and remoteness of these localities from the markets make alternatives economically unfeasible and thus unsustainable for rural development. Ineffective policy planning that does not address the problem in a holistic way causes the dilemma of local people in remote areas. The challenge at Goba is to develop alternative livelihoods that are economically, socially and ecologically sustainable. Nature-based tourism has been identified as such an alternative to realize this goal. However, this development requires incentives for sustainable resource use, which can be created either by expanding the benefits accruing from the efficient use of the resource or by changing the distribution of the benefits and cost in favor of the users.

In many cases, local communities have developed tourism initiatives in ecologically fragile, remote areas, without sound planning based on detailed ecological and socio-economic information. Uncontrolled flows of tourists in unplanned tourist destinations degrade these areas. These destinations lose their aesthetic appeal; tourism flow decreases and consequently new attractions are opened. This study is of a land use planning nature and follows a combination of existing framework tools.

The primary aim of this study was to develop simple guidelines for nature-based tourism that contribute to the conservation and management of the rural woodland areas as well as to the improved socio-economic welfare of rural communities in the Goba area. The study used baseline information for planning, focusing on the tourism market and on the ecological and socio-economical aspects of the study area. Two strategies were used to obtain the information, namely market research and attraction resources analysis.

The market research in the southern part of Mozambique shows that: International tourist flows are at present from Southern African countries mostly South Africa (more than 50%), North America, Europe and Australia or Asia. Mozambique is perceived mainly as a sunny beach destination for vacations and weekends though most of the tourists were engaged in multi-destination itineraries that included safari, wildernesses, bird watching, touring and curiosity. There was no evidence from any tourist that nature tourism was the reason to visit Mozambique, but many of them said that they would visit ecotourism and nature tourism destinations if available. The average daily expenditure per tourist was found to be US\$47. Tourists from long-haul distances had higher disposable expenditures and stayed longer in both attraction

assets and in the country. Sixty nine per cent (69%) of surveyed tourists were over 50 years of age and they were mostly males (57%).

The results show clearly that many issues must be taken into consideration where the development of ecotourism and nature-based tourism, especially in rural areas, is concerned. Such considerations should include (i) careful planning of the destinations based on the local developmental policy; (ii) developing saleable tourist products and packages and (iii), promotional strategies to expand the market to capture tourists with high average daily expenditure. The rural communities can then have a chance to develop nature-based tourism that uses outstanding natural resources.

The resources analysis study results revealed that: The rugged topographic, climatic conditions of Goba water catchment area and the distance from settlements have naturally preserved local forest resources from human utilization. The area has well conserved and differentiated natural scenic landscape. These scenic landscapes have recreational values as well as environmental contrast, scientific discovery potential and retention of vanishing biological species. To preserve or improve the management of these landscapes, it is essential to consider recreation use in relation to all other potential values. Few existing landscapes showed a relative ability to absorb impacts produced by facility development with a minimum negative effect on the visual and ecological quality of the landscape. The majority of the landscapes have some potential for primitive and sensitive recreational spectrum.

All these results are consistent with results from similar studies on watershed and water catchment ecology. Given the constraints on the environmental settings of the Goba landscapes, it is recommended that the basic and logic framework development should attract tourists interested in the more primitive portion of the recreational spectrum and should have fewer facilities of small-scale building. These facilities should be rustic in character with less service and more emphasis on self-reliance. Improved management of the Goba ecosystem is needed to maintain the ecological functions of the catchment and local culture and rurality.

In conclusion, this study suggests that, if on these remote fragile ecosystems local communities can protect and market attractive quality-of-life-amenities, maintain a relatively low cost of living, and offer serviceable links to global telecommunication infrastructures in order to attract tourists and retirees, these communities can survive and may even thrive as local economies. An incentive planning method and sustained extension outreach effort in rural development, which focuses on nourishing local action at the grassroots level, will complement such a policy strategy.

Opsomming

Omvattende verandering van die natuurlike plantegroei in die Goba area van suiderlike Mosambiek is teweeg gebring deur die deurlopende bonting van die omgewing deur die misbruik van die natuurlike hulpbronne vir ekonomiese wins. Die ontwikkeling van alternatiewe inkomstebronne vir plaaslike gemeenskap kan hul afhanklikheid van hout vir die produksie van houtskool, boumateriaal en houtsneewerk verminder. Die gebrek aan infrastruktuur en die groot afstande na markte maak die verkoop van die houtprodukte in stedelike gebiede onprakties en dus nie 'n volhoubare oplossing vir landelike ontwikkeling nie. Oneffektiewe beleidsbeplanning wat die probleem nie holisties benader nie veroorsaak 'n dilemma vir inwoners in afgeleë gebiede. Die uitdaging in Goba is om alternatiewe bronne van inkomste te ontwikkel wat ekonomies, sosiaal en ekologies volhoubaar is. Natuurgebaseerde toerisme is geïdentifiseer as 'n moontlike alternatief wat aan die doel kan beantwoord. Die ontwikkeling van eko-toerisme sal egter net slaag indien die plaaslike bevolking genoegsaam aangemoedig word om die natuurlike hulpbronne op 'n volhoubare basis te benut. Dit kan gedoen word óf deur winste terug te ploeg in die omgewing en so die toerisme basis te vergroot óf deur winsdeling op 'n gebruikersgunstige voordele- en kostebasis te behartig.

In baie gevalle het plaaslike gemeenskappe toerisme inisiatiewe in sensitiewe, afgeleë gebiede ontwikkel, sonder deeglike beplanning wat op uitgebreide ekologiese en sosio-ekonomiese inligting berus. Die onbeheerde toeriste aanloop na onbeplande areas lei tot die stelselmatige vernietiging daarvan. Hierdie bestemmings verloor hul estetiese waarde en het tot gevolg dat toeriste ander ongerepte areas gaan soek. Hierdie studie handel oor die beplanning van grondgebruik en volg 'n kombinasie van bestaande raamwerk prosedure.

Die primêre doel van hierdie ondersoek is om eenvoudige riglyne vir natuurgebaseerde eko-toerisme te ontwikkel wat 'n bydra kan lewer tot die bewaring en bestuur van die natuurlike wonde en wat die sosio-ekonomiese welvaart van die plaaslike bevolking van Goba sal bevorder. Die studie maak gebruik van basiese inligting vir beplanning, en fokus op die toeristemark sowel as op die ekologiese en sosio-ekonomiese aspekte van die studie-area. Die twee strategieë wat gevolg is om inligting in te win is marknavorsing en die analise van toeriste-atraksie hulpbronne.

Marknavorsing in die suide van Mosambiek toon dat die meerderheid internasionale besoekers aan Mosambiek afkomstig is van lande in Suidelike Afrika (Suid-Afrika alleen 50%), en daarna uit Noord-Amerika, Europa and Australië/Asië. Mosambiek word hoofsaaklik as 'n sonnige strandoord-bestemming vir

vakansies en naweke beskou, hoewel die meeste toeriste 'n multi-bestemming reisplan volg wat safaris, ornitologie, reis en besoeke aan besienswaardighede insluit. Daar is geen bewys gevind dat enige toeris Mosambiek besoek het met eko-toerisme as doel nie, maar baie sou belangstel om dit te doen indien eko- en natuurgebaseerde toeriste-betemmings beskikbaar was. Die gemiddelde daaglikse uitgawe per toeris was US\$47. Toeriste wat groot afstande moes aflê om hul bestemming te bereik het meer beskikbare fondse en bly langer, beide in die land en by verskillende attraksies. Van die toeriste by wie die opname gemaak is 69% ouer as 50 jaar en die meerderheid (57%) was mans.

Die resultate toon dat daar talle faktore is om in ag te neem by die ontwikkeling van 'n landelike area vir natuurgebaseerde en eko-toerisme. Daar moet aandag gegee word aan (i) deeglike beplanning van die bestemming gebaseer op die plaaslike ontwikkelingsbeleid; (ii) die ontwikkeling van verkoopbare toeriste produkte en pakkette; en (iii), promosie strategieë om die mark uit te brei om toeriste wat meer spandeer te lok. Die landelike gemeenskappe word sodoende die geleentheid gebied om hul besondere natuurlike hulpbronne te ontwikkel vir natuurgebaseerde toerisme.

Die hulpbron-analise toon dat die afgeleë en bergagtige topografie en die klimaatsomstandighede van Goba se wateropvangsgebied as natuurlike beskerming vir inheense woude teen die benutting deur die plaaslike bevolking gedien het. Die area is goed bewaar met skouspelagtige natuurtonele. Die skouspelagtige landskap beskik oor rekreasiewaarde sowel as omgewingskontras, potensiaal vir wetenskaplike ontdekkings en vir bewaring van seldsame fauna en flora. Om hierdie landskap te bewaar of die bestuur daarvan te verbeter, moet gebruik vir rekreasie in verhouding tot die ander potensiele waardes beskou word. Daar is beperkte areas wat die vermoë besit om ontwikkeling te absorbeer en waar die verbouing van fasiliteite slegs 'n minimale negatiewe effek op die visuele en ekologiese kwaliteit sal hê. Die potensiaal bestaan egter vir alle areas om op 'n beperkte skaal ontwikkel te word vir die primitiewe en sensitiewe sektor van die rekreasie spektrum.

Die resultate van die vavorsing stem ooreen met soortgelyke studies van waterskeiding- en wateropvangsgebied-ekologie en ontwikkeling. Vir die gegewe omgewingsbeperkings van Goba word dit aanbeveel dat ontwikkeling op 'n basiese vlak geskied om daadie proporsie van die toeriste te lok wat in die sogenaamde wildernis-ervaring belangstel. Geboue en beperkte fasiliteite moet slegs op klein skaal opgerig word. Die fasiliteite moet by die omgewing inpas en die klem moet op selfvoorsiening eerder as op dienstelewering val. Die bestuur van die Goba ekosisteem moet egter verbeter om die ekologiese funksie en die plaaslike kultuur en landelikeid te behou.

Die bevinding van die studie is dat indien ver-afgeleë en sensitiewe ekosisteme deur die plaaslike bevolking bestuur en beskerm word, dit tot ekonomiese welvaart van die landelike gebiede kan lei. Hierdie areas moet bestuur word sodat die landelike karakter as toeriste aantreklikheid behou word, dat die lewenskoste relatief laag bly en dat verbindings met die buitewêreld op telekommunikasie vlak ingestel word. Beplanning moet op 'n aansporingsbasis gegrond wees met uitreikingsprogramme met landelike ontwikkeling as doel. Aanmoediging van plaaslike aksie op grondvlak behoort so 'n beleidstrategie te versterk.

DEDICATION

To my daughter and mommy “ *Maria de Fátima Leonilde*”

I dedicate this with a lot of Love and care.

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CHAPTER 1

INTRODUCTION

1.1 Background Information

Mozambique is a large country with a total area of close to 800 000 km². The population is concentrated in the southern provinces of Maputo, Gaza and Inhambane and in Zambezia and Nampula in the centre-north. Current figures put the Mozambican population at a little more than 18 million. The population is in general very young, with close to 50% under the age of 15, and 70% under 30 years. Mozambique's beaches along its 3,000 kilometers of coastline, and its once abundant wildlife have drawn visitors since the colonial era. People from over the world came to one of the richest game parks in Southern Africa, Gorongosa National Park, which was considered to be the showpiece of colonial Mozambique's conservation effort (Massinga, 1996), and several other hunting areas. For years Mozambique was racked by a civil war, which officially only ended with the national elections in 1994. The war resulted in massive degradation of both forest and wildlife resources within the conservation areas either for food or for trading in illegal ivory. It destroyed a significant proportion of the country's transport and other infrastructure, as well as its productive capacity, causing the economy to shrink by more than 50% over 20 years.

The most recent investments in eco-tourism are mainly concentrated in the coastal areas with few of these initiatives in the interior. Many of these initiatives have failed to involve the local community (Massinga, 1996). The main problem has been the fact that these initiatives tighten poaching control and limit access to resources consequently locals no longer have access to resources such as meat, timber and firewood for household consumption.

Despite the potential for eco-tourism, however, there is currently no framework for recreation and eco-tourism planning in the country. There are currently no standardized criteria for site selection for integrated recreation and tourism planning particularly in the coastal conservation areas and beaches. By promoting nature-based tourism, Mozambique would not only optimize land-use and logistic capacity, but it would maintain the woodland forests and environmental resources as well as reduce its current over-dependence on exploitation of wood biomass for fuel energy.

1.2 Problem Statement and Rationale

1.2.1 General

Mozambique is well endowed with natural resources that can support economically viable nature-based tourism and recreation activities. Many of the nature-tourism initiatives lack management plans and clear objectives for community participation. Currently the nature-tourism potential in Mozambique has not been fully tapped (Massinga, 1996).

The economic impact of nature-based tourism in remote rural areas may not be greater than large-scale developments, in environmentally sensitive areas in the short-term. In the long-term, however, nature-based tourism, if well conceived and planned, can be sustainable by preserving the natural environment, promoting awareness of conservation, providing extra income to local residents while securing their traditionally agriculture-based jobs, and providing recreational opportunities (Lee, *et al.* 1998). Nature-based tourism, as an emerging strategy for sustainable development, needs to justify its existence economically (Lee and Snepenger, 1992 in Lee, *et al.* 1998). Currently, the excessive dependence on wood fuels as a source of domestic energy, coupled with the increasing scarcity of natural resources in rural areas, is causing numerous problems of a socio-economic and environmental nature (Tsamba and Soto, 1987).

1.2.2 Goba Area

The continuous use of the forest resources of Goba area for economic purposes, such as fuel wood and timber extraction, grazing, clearing for agriculture and fire have caused extensive changes in the original vegetation structure. The ongoing environmental destruction that results from the economic dependence of the community on the production of charcoal, building materials and carvings for income can only be reduced by developing alternative sources of income for the community. And by reducing the dependence of the urban population on charcoal as their major source of energy. Goba and similar remote rural undeveloped areas have identified developmental alternatives (charcoal production, non-timber forest products) to address local needs, but the lack of infrastructure and remoteness of the locality from the markets make these alternatives uneconomical. The marginal revenue from these possible alternatives is low and marginal cost (production, transport and selling) is higher in remote than less remote areas and consequently the output per unit of product will be lower in these areas (Chisholm, 1979 quoted by Hite 1997). This makes the economics of the alternatives sought insignificant to address rural socio-economic problems and thus unsustainable for rural development. Being rural means operating under economic disadvantage of having to overcome some cost that are higher than in other places that are less rural (Hite, 1997). The challenge at Goba is to develop alternative livelihoods that are economically, socially and

ecologically sustainable. Therefore, nature tourism, with its origins in conservation, is perceived as the best alternative to address these problems.

Integrated nature tourism and recreation planning for remote rural areas are viewed as a starting point towards developing sound tourism management plans, especially for those woodlands where little or no additional investments infrastructure is required. By developing nature tourism in the area, the incentive for sustainable use can be created either by expanding the benefits accruing from the efficient use of the resource or by changing the distribution of the benefits and cost in favor of the users (Tsamba and Soto 1997). Tourism policy makers and planners may face challenges with regard to which development alternatives will be more valuable in environmentally sensitive areas. Since the value of nature tourism is beyond the simple estimates of monetary reward, nature tourism and other new forms of tourism may be viewed as the total value of natural resources (Lee *et al.*, 1998). The dilemma of the local people in the remote areas is caused by ineffective policies planning that do not address the matter in a holistic way.

1.3 Aims and Objectives

This study was conducted as part of a broad Goba community natural resources management project that uses ecological and economic development strategy to address these issues and opportunities. The general objective is to develop simple guidelines for nature-based tourism that contribute to the improved conservation and management of the local woodlands and the socioeconomic welfare of rural communities. This objective may be achieved by focusing on the ecologically and economically sustainable nature-based tourism development at Goba. The assumption is that Goba has the potential to develop nature-based tourism. The assessment and classification are based on the premise that all landscapes have some value, but those with the most variety or diversity have the greatest potential for high scenic value as attractions for recreations and tourism.

1.4 Specific Objectives

These objectives were developed through conducting the following studies:

- a) Biophysical and market survey of existing and potential natural resources
- b) Develop a framework for community nature-based tourism planning in remote woodland areas
- c) Use this framework for developing community nature-based tourism for Goba Area

1.5 Importance of the study

This study will contribute to developing standardized and adaptive methodologies for integrated nature-based tourism planning in Mozambique. Being the first of its kind in this field, the study will serve as a baseline for future nature tourism development in the country. In this regard, the study will also contribute

to policy development for nature tourism planning and management.

1.6 Layout of the thesis

The thesis is divided into 7 chapters. Chapter 1 consists of an introduction, general background information, the problem statement and an outline of the aims and objectives. Chapter 2 provides an overview of the literature regarding the conceptual framework of nature-based tourism and development planning. More emphasis is given to the tools for sustainability analysis, planning and managing nature tourism and recreation resources in the destinations for tourism as well as some socio- economic valuation methods for recreational resources. Chapter 3 describes the site selection process and provides information on the research site and research methods. In Chapter 4 the results of the Tourism Market survey are presented and interpreted. The results are then discussed and compared with other similar studies. Implications for nature based tourism development are explored and outlined from Market studies. In Chapter 5 the results of the Attraction Resources Analysis (forest and cultural resources) are presented and interpreted. The results are discussed and compared with similar studies. Similarly implications on policy from Resources analysis results are explored to guide local development especially infrastructures. Methodological improvements are recommended. Chapter 6 is comprised of the general conclusions. Conclusions and brief recommendations for development from the studies are drawn. Finally in Chapter 7, based on the findings, specific recommendations are made to guide nature tourism attractions and services development and management. Recommendations are based on both study results and policy implications especially related to site's capability and sensitivity to accommodate nature tourism. Special attention is given to tourism policy development framework and services development and management.

CHAPTER 2

THEORETICAL FRAMEWORK

2.1 Nature - Based Tourism

2.1.1 Introduction

Nature tourism is defined by Wells (1997) and Beeton (1998) as those forms of tourism where natural attractions of ecological significance are the tourist destination, leading to a principal focus on tourism in state-run protected areas and in land which is privately owned or under communal tenure. The definition of eco-tourism focuses on environmentally responsible tourism (Cebellos-Lascurain, 1993) that provides direct benefits to the nature conservation area and to the economic welfare of local residents (Ziffer, 1989; Scheyvens, 1999; Wells, 1997), or that uses outstanding natural attractions to promote conservation and sustainable rural development (Boo, 1992). While these definitions insist that local people should share in the benefits of ecotourism, the ways in which local people have been drawn into this phenomenon have not always been in their best interest at all (Scheyvens, 1999).

Wight (1996) asserts that the actual definition used is less important than the application of the principles supporting ecotourism. Ecotourism has five qualifying components, each of which must exist in order to sustain the quality of the experience. (Lew, 1998; Meric and Hunt, 1998). These components are that the ecotourism should be based on relatively undisturbed areas; non damaging, non degrading, ecologically sustainable; a direct contributor to the continued protection and management of natural areas used; subject to an adequate and appropriate management regime and the education of both guides and tourists/clients must be more sensitive in the destination environment. Thus, eco-tourism is recognized as a subset of nature tourism (Wells, 1997) and has its origins in conservation.

The term 'nature-based' tourism implies not only to the use of nature as an attraction, but a 'reciprocal' relationship with nature (Forbes, 1998). Most importantly, "nature" by definition includes people, when they do not unduly infringe on the existence of other natural things (Povilitis, 1994). Therefore nature tourism is a sub-set of the tourism industry that provides sustainable tourism products that are both environmentally and culturally sensitive and contribute to the well being of the destinations visited.

2.1.2 New forms of tourism: Opportunities for rural development

Nature tourism is a dynamic market that, in the last few years, has experienced faster than average growth in a burgeoning sector with an estimated growth rate of 10-15 % of the largest industries in the world, tourism (Scheyvens, 1999). The demands of increasingly affluent western consumers for remote natural

and exotic environments have created an upsurge in nature tourism ventures, particularly in Third World countries (Scheyvens, 1999; Place, 1998). Meanwhile, in these countries, stagnant or declining commodity prices and growing foreign debts force governments to seek economic alternatives (Place, 1998). Some argue and defend that the motive attracting people to the countryside is a reflection of a growing interest in heritage, the search for peace and solitude, increasing interest in outdoor activities and a number of general trends of tourism motivation (Kastenholz *et al.* (1999); Whelan, 1991). Kastenholz *et al.* (1999) stresses that the attractiveness of rural areas for tourism and recreation can first be associated with the image of rurality.

While some environmentalists have promoted nature-based tourism as a non-consumptive use of nature and a win-win development strategy for undeveloped rural areas (Place, 1998; Robford Tourism, 1999; Hvenegaard 1994), others caution against uncritically accepting these new forms of tourism as a common good (Scheyvens, 1999; Cater 1993). The greatest concern is that precisely these more remote, less developed tourism areas which tourists seek are those most vulnerable to cultural disruption and environmental degradation (Kastenholz *et al.* 1999; Scheyvens, 1999). A major problem is that in many cases, operators are using the ecotourism label merely as a marketing tool to capture a larger percentage of the travel market (Beeton, 1998; Thomlinson and Getz, 1996; Scheyvens, 1999; Malloy and Fennell 1998; Wells, 1997) without offering any ecological product.

For tourism that uses nature as attraction, the business must take into consideration many more stakeholders (i.e., the organization, tourists, local people, and the resource base) to thrive. Malloy and Fennell (1998) suggest that for tourism to be sustainable, it must adopt a community economic development strategy based on economic self-reliance, ecological sustainability, community control, meeting individual needs, and building a community culture. These initiatives strive to encourage rural communities to conserve and wisely manage their natural tourism resources and to empower local entrepreneurs to seize and optimize the opportunities presented through the development of tourism facilities and services required to meet tourists' demands.

2.1.3 Poor planning and environmental degradation of tourism destinations

Local communities in many cases have adopted these initiatives in fragile remote areas without sound planning based on detailed ecological, socio-economic information. Experiences from all over the world show that these small and fragile destinations are being negatively impacted by over development with eventual decline of the conditions that first attracted tourist. Examples from Forbes (1998) include Acapulco and Cancun in Mexico, Miami in the United States and several islands in the Caribbean; Whelan (1991) mentions one of the most popular beach front parks (Manuel Antonio) in Mexico experiencing overcrowding, water pollution, trail erosion and disrupted wildlife behavior. Whelan, (1991) further

describes how the rapid increase in the number of eco-tourists has overloaded fragile areas and gives examples from Nepal where the number of tourists increased fivefold, from 45, 000 to 223,000 between 1970-1986. She pointed out that the sensitive soils of the savannas in Africa are crisscrossed with tyre tracks where tourists in search of wildlife have offered drivers large tips to go off the roads. The feeding and mating habits of the region's wildlife have been disrupted as animals react to large numbers of viewers. Some animals, such as the cheetahs, become so disturbed that they frequently fail to feed, mate, or raise their young (*op.cit.*).

In Wight's opinion, tourism cannot be blamed for environmental deterioration caused by bad decisions rather than real visitor impacts. If the natural environment or the culture is damaged, or if tourism is weakened, we lose a positive force motivating people to sustain and enrich the environment (Wight, 1998).

As with other forms of special travel, nature tourism is typically characterized by small tour groups (Lew, 1998; Beeton, 1998; Wunder, 2000). The major reasons for preferring smaller groups are:

(1) To reduce the negative impacts on the environment and cultures visited; (2) To allow guides to provide better services through enhanced group dynamics and individual attention to client needs; (3) The limited carrying capacity of accommodation, transport and destination environment, and (4) To enhance the client's experience of the destination.

Local communities' participation in nature tourism has been constrained by a lack of relevant knowledge and experience, lack of access to capital for investment, inability to compete with well-established commercial operations and simple lack of ownership rights over the tourism destinations (Wells, 1997). Poor marketing and increasingly complex information technology is another problem for the rural tourism initiatives (Williams *et al.*, 1998 and Wells, 1997).

While all forms of tourism can make substantial contributions to national income, foreign exchange earnings, employment and government revenues, only nature tourism is particularly important in the context of sustainable development (Wells, 1997). This is because it offers the potential for mobilizing resources through the private sector which can contribute to local and national economic development while providing an incentive for conservation, land use, and helping to finance bio-diversity conservation. Where the initiative involves locals it is argued that if the initiatives are to be sustainable, local populations must be allowed to capture a significant amount of the economic multipliers generated by tourism. In conclusion nature tourism cannot be introduced where the environment is not able to sustain it or where the impact on the local community would clearly be adverse, or where there is insufficient interest in the product.

2.2 Tools for Resources Analysis in Planning and Managing Nature Tourism Destinations

2.2.1 Rationale

An economic approach to the management of nature tourism and other types of destinations can help to identify ways of maximizing net financial or economic benefits. However, when the use of a nature tourism destination is uncontrolled, maximizing net economic benefits may result in irreversible damage to the environment (Wells, 1997; Tisdell, 1996). The occurrence of some negative environmental impacts from tourism in natural areas does not mean that natural areas should not be used for tourism. Furthermore it does imply that if tourism and conservation are to be combined effectively, tourism in natural areas must be well planned or managed ((Wells, 1997; Tisdell, 1996).

The optimal economic solution will probably only coincide with the conservation objectives of the destination when constraints are added to maintain a defined standard of environmental quality. The limitation of visitor numbers is perhaps the most obvious method for managing negative impacts and this has led to a focus on ecological carrying capacity (Wells, 1997; Hjalager, 1999). There is a need to properly manage people. The majority of management problems are created by people and if we do not manage the people, it is impossible to manage the resources (Young, 1991). With appropriate management and planning, the adverse impacts of tourism on the natural environment can be minimized. Any environmental damage that does occur to a nature tourism destination should ideally be monitored with reference to carefully selected environmental indicators, which will usually be site-specific and will often be difficult to measure. The adaptive management of visitors in response to the signals from such careful and regular monitoring would ideally focus on infrastructure and other developments as well as the number of visitors, duration of stay and activities (Wells, 1997). These combined activities may be harmful to the visual beauty as well as to the health of natural environment.

Nature tourism development, planning and management frameworks should include the carrying capacity (CC), limit of acceptable change (LAC), environmental impact assessment (EIA), visitor impact management (VIM), visitor experience resources protection (VERP) and visual absorption capability (VAC) (Wells, 1997; Wight, 1998). One of the approaches regularly advocated is determining the carrying capacity.

2.2.2 Carrying Capacity

Carrying Capacity is a term borrowed from wildlife ecology, with a rather precise use: the maximal population size of a given species that an area can support without reducing its ability to support the same species in the future (Lindberg, *et al.*, 1996; Wight, 1998). Although the term is a good example of conventional wisdom it is difficult to apply this definition to human resources for many reasons. One of the

reasons is that the concept has many divisions. Carrying capacity is subdivided into ecological capacity (ecosystem parameters), physical capacity (space parameters), facility capacity (development parameters), and social capacity (experience parameters) (Wight, 1998; Jubenville, *et al.*, 1987).

While establishing the ecological capacity for protected areas seems essential, very few areas in the developing and developed worlds alike have identified carrying capacities (Whelan, 1991). Nor have planners determined how to avoid exceeding those carrying capacities. Nevertheless, because of its origins in the natural sciences, the term *carrying capacity* suggests objectivity and precision not warranted by its use in planning that involves human systems. Determining carrying capacity in tourism planning ultimately requires the consideration of human values and, because of the subjectivity of these values; it is essential that managers engage in active dialogue with a variety of publics (Forbes 1998). For planning purposes, unfortunately carrying capacity can only be used only as a guiding concept, with limited success outside of wildlife management.

Some authors (Shelby and Hebelein 1984; Lindberg *et al.*, 1996) define carrying capacity as the level of use beyond which impacts exceed acceptable levels specified by evaluative standards. This means that it identifies a number of variables for one management parameter: use level, assuming a fixed and known relationship between use level and impact parameter. The problem here is that the capacity may change if management parameters alter that relationship, if management objectives change or if user populations change radically. The other problem in applying use levels as management parameters is that it is all too tempting to expand limits (Wight 1998). This is especially true when tourism is controlled by tour companies or for economic gains. Experiences around the world of using carrying capacity to provide limits on the number of tourists show that these limits are usually ignored, when the desire of more gains is paramount.

2.2.3 Environmental Impact Assessment

Environmental Impact Assessment (EIA) has been an important planning tool for some decades. The concept is not only a tool but also a process. It identifies ways of improving projects environmentally and preventing, minimizing, mitigating or compensating for a diverse array of impacts (Wight, 1998). Currently this approach has become more scientifically rigorous with its scope expanding to include (Wight, 1998; Goodland and Mercier 1999):

1. Social, economic, cultural and other non-biophysical environmental issues and concerns;
2. Programs and policies, as well as specific projects;
3. Not just single projects, but also concurrent projects in the same area;
4. Similar projects occurring sequentially in the area; and

5. Cumulative effects.

EIA as a planning tool has been criticized for rarely integrating environmental, social and economic issues successfully, and therefore being more suitable for nature tourism planning than for the planning of new forms of tourism.

2.2.3.1 Cumulative Effects Assessment

The term *cumulative effects assessment* (CEA) carries a different connotation. It can refer to the additive effects associated with a single project, or to the cumulative effects of multiple developments, processes, and their associated compounding effects (Lindberg, 1991; Wight, 1998). In general, accumulated impacts represent the sum of the ecological changes induced by man's use of land, water, marine and atmospheric resources (*op.cit.*). CEA is particularly important to tourism, since tourism development not only includes the large-scale resort-type projects that gain considerable publicity, but also smaller, more widespread types of operations, which may together have a significant impact (Wight, 1998). Though this tool is considered holistic and integrative (Wight, 1998), by using sustainability approach measures such as social goals and values, it fails to address problems before they appear. Social and economic factors are the driving forces in promoting activities that cause cumulative effects. Therefore, solutions may lie not only with improved environmental management (of which EIA is part), but also with changes in economic policies and social perceptions.

2.2.4 Visitor Impact Management

The visitor impact management (VIM) approach is an extension of the Recreation Opportunity Spectrum (ROS) approach that is used to assess the impact of visitors on a resource and a recreation experience. It involves a systematic collection of data to predict the impacts of different management strategies as well as the collection of management information on the desirability of identified alternatives (Hjalager, 1999; Wight, 1998). VIM requires two separate elements: description of the relationships between specific conditions of use and the associated impacts, and evaluation of the acceptability of various impacts. It has been used in situations of mass tourism and urban areas, especially in Australia (*op.cit.*). VIM has the flexibility that it can be integrated with other planning frameworks or used as a management tool for specific local impact.

It is suggested that visitor impact management may be direct (to regulate or restrict visitors activities) or indirect (influence in visitor behavior). However it is well known that limiting use is only one of a number of strategies. It has the following disadvantages: (1) from the environmental perspective it needs scientific data; (2) from the social perspective it is difficult to establish the upper limit of visitor numbers which

depends on a range of variables, such as mode of transport, infrastructure, and the timing of tours.

2.2.5 Visitor Experience and Resource Protection

With its origins in the carrying capacity concept, visitor experience and resource protection (VERP) is increasingly used as a planning tool to refer not only to the prescription of the number of people, but also the prescription of desired ecological and social conditions (Jubenville *et al.*, 1987; Wight 1998). The idea is to provide measures of the appropriate conditions, rather than measures of the maximum sustainable use. Like the Limit of Acceptable Change (LAC) and Visitor Impact Management (VIM), VERP also takes the approach that management goals must be translated into measurable management objectives by using indicators and standards (Wight 1998). It is used mainly as a tool for conservation area planning. Therefore it cannot be applied outside park boundaries if it only examines the impact of visitors on an area, because examining the impact of visitors on host people is at least equally important. Moreover, various authors have noted that visitor use patterns, desired visitor experiences, natural resources and park management all change with time, so the effectiveness of the tool requires long-term monitoring (Wight, 1998; Jubenville *et al.* 1987; Whelan 1991; Lindberg *et al.*, 1996).

2.2.6 The Limit of Acceptable Change

Limit of Acceptable Change (LAC) has been proposed as an overall framework for addressing the issues of managing impact and ensuring quality recreation experiences (Wight, 1998). LAC is a planning procedure designed to identify preferred resource and social environmental conditions in a given recreation area and to guide the development of management techniques to achieve and protect those conditions. More commonly used in wilderness area planning, the LAC model has been used for general tourism planning due to its ability to anticipate and head off undesirable limits of acceptable change (Forbes, 1998; Wight, 1998).

One of the advantages of LAC is that it is a forward-looking but not an explanatory process, once the preferred resources and social environmental conditions are identified, monitoring become easy and understandable among involved people. Moreover, in planning visitor use, and in monitoring that use, the system offers considerable benefits over largely *ad hoc* systems of development and management that exists in the tourism industry at present (Wight, 1998). The LAC system has a limitation in that without detailed ecological information for each site, the standards adopted will be arbitrary. In addition, in order to attract visitation to an area, some authorities may choose lower standards than are necessary to maintain long-term environmental and cultural integrity of an area. LAC for specific locations does not appear to consider the cumulative effects of tourism-recreation activities in surrounding areas (Forbes, 1998).

2.2.7. Visual Absorption Capability

Scenery is a universally enjoyed natural resource. Visual Absorption Capability (VAC) may be considered as an element of the site analysis process which environmental designers and planners have used for many years. Visual absorption capability is defined as the physical capacity of landscape to absorb proposed development and management activities and still maintains its inherent visual character and quality (Anderson *et al.*, 1979; Yeomans, 1979). VAC is an analytical process, which identifies the landscape's susceptibility to visual change. It uses natural factors and processes to determine which areas are most suitable for nature tourism development or forest area preservation. It is a measure of the land's ability to absorb alterations yet retains its visual integrity. An appreciable advantage of this VAC assessment approach is that a relatively low cost reconnaissance provides the basis for determining where detailed work will be required in the design, proposed development, and implementation phases of any proposed tourism development and/or management activity (Yeomans 1979).

2.2.7.1 Biophysical factors

Biophysical factors refer to naturally occurring objects and processes of an area, such as geological landform attributes, vegetation attributes, and soil attributes. They are relatively static except through the impacts of human actions or natural disasters. There are good reasons to use biophysical factors for nature tourism attraction assessment. First, biophysical factors are more constant over time than social and economic considerations and thus lend themselves more readily to inventory and analysis. Secondly, visual analysis is often carried out in areas where social factors arising out of proposed new developments are in a state of flux political or otherwise – and thus more difficult to assess in the context of VAC. Community preferences for landscape types may also change over time (Anderson *et al.*, 1979). The following table (Table 2.1) presents the biophysical factors governing Visual Absorption Capability as well as the assessed variables in the field.

TABLE 2.1 Biophysical factors governing Visual Absorption Capability

Factors	Assessed variables
Slope	Slope stability, Slope: angle of repose Slope as viewed from superior, inferior, and Normal viewer position
Soil	Erosion potential (leading to exposure)
Vegetation	Regeneration potential –soil fertility and macro climatic factors
Soil and Rock Color Contrast	Low to high contrast with characteristic landscape cover
Landscape Diversity	Vegetation density, diversity pattern and screening potential: successional characteristic Landform/land use diversity

Adapted from: Yeomans (1979) and Anderson *et al.* (1979)

For this kind of analysis one must realize that these biophysical factors act together and they do influence each others. They form a system that influences ecological stability in response to the disturbance (Zonneveld, 1995). Among them the slope is the most important factor that influences the ecological degradation through erosion following human or natural disturbance. But in general, they are spatial and temporally.

The five primary factors governing VAC biophysical ratings are slope, vegetation regeneration potential, landscape diversity, soil erosion, and soil and rock color contrast potential (Yeomans, 1979). The most universally accepted biophysical VAC factor is slope, for as the slope ratio of a seen area increases, the visual absorption capability decreases (Anderson *et al.*, 1979; Yeomans, 1979). Vegetation composition, screening ability, color diversity and regeneration rates are also extremely important for as they increase or become viable, VAC increases. Vegetative pattern and diversity increase visual absorption capability and as vegetative screening increases, VAC increases. Lands with the highest contrast between soil color and surrounding landscape have the lowest VAC. These are defined as tabled (table 2.1) above. Only the physical features having greatest impact upon the study objectives should be selected as recommended by Kell (1979). The best sources for VAC assessments are aerial photographs and ground truth checking.

2.2.7.2 Summary of tools for resources analysis in planning and development of tourism areas

Generally tools, or approaches such as EIA, LAC, VIM, VERP and VAC, offer more practical and flexible application. They do not focus only on managing the use, but also on managing the resource, managing the visitor and managing the impact. LAC recognizes the diversity of visitor expectation and preferences. When different sectors have an equal or greater interest in the land, there is more need to incorporate their values. LAC assists this. VIM is a flexible process, suitable for smaller scales than LAC, and adaptable to wilderness, rural or densely populated areas. These tools should not be used once only tools; they should follow projects through their entire life cycle. In conclusion: None of the tools described here should be fully

seen as a panacea for tourism resource management problems. They however do provide valuable guidelines within which decision-makers and planners can plan within acceptable conditions, priorities and resource management in a regional or more specific rural context.

2.3 Market Survey

2.3.1 Introduction

Understanding tourist origin, expenditure patterns and its relevance to increasing tourism's economic benefits is critically important to all travel destinations (Reid and Reid, 1997). Such knowledge can assist decision-makers to better identify tourist markets that offer opportunities for growth and formulate appropriate strategies to maximize tourism yields. The country of origin, since it typically serves as a basis for categorizing tourist markets and is universally employed as a basis for interpreting data, has the potential to provide this information if it can be used to identify preferred tourist markets. Economic value of tourism is generated over an entire travel purchase cycle by spending prior to and after arriving at destination and involves such expenditure categories as accommodation, transportation, sightseeing, activities, eating and drinking, shopping, and personal services.

Several factors affect spending patterns and levels and are relevant in determining preferred tourist profiles. These include type of trip taken, (i.e., purpose, itinerary, length of stay, travel group size, and composition), travel purchase characteristics (retail outlet used and type of trip, accommodation used), the attractions visited and activities participated in at the destination. These variables provide data on travel decisions and characteristics that can be used to identify actionable differences in origin markets.

2.3.2 Expenditure functions in Tourism Market Studies

Planning for what, where, and how to market a natural area to ecotourists, requires knowledge of the ecotourists' characteristics, specially their preferences and motivational characteristics (Meric and Hunt, 1998). A brief review of the application of expenditure methods analysis is provided in order to set this study in the broader context of a rapidly growing research field. Expenditure functions are used extensively in the travel and tourism literature to explore factors that influence visitors' expenditures at both macro-and micro levels Leones *et al.* (1998).

Leones *et al.* (1998), Meric and Hunt (1998) and Tideswell and Faulkner (1999) used expenditure function techniques in tourism and nature tourism travel market valuation studies. Mudambi and Baum (1997) used utility-maximizing expenditure models to estimate the total expenditure per visitor per night in an empirical analysis of tourist expenditure in order to define strategic segmentation in Turkey. Using price proxy, income proxy and eight identifiable subgroup characteristics (behavioral and demographic variables)

they found that all the characteristics were strongly associated (negative for price and positive for income) with expenditure. Average daily expenditure is a measure of spending that is directly linked to the length of stay and can be managed through product and package development. The approach to nature-based tourism planning assessment in Goba will explore both the implications of tourism market survey and sensitivity of the area through Visual Absorption Capability method. This will provide information not only on what types of tourists and development facilities would be desirable but also on the feasibility of nature-based tourism in the area and policy implications.

CHAPTER 3

STUDY SITE AND METHODS

3.1 Study Site Description

3.1.1 Site selection and description

Selection of a suitable study site was based on the following considerations: (1) availability of natural resources (2) social aspect considerations and (3) the presence of FAO projects in the area. The selected area, among other attributes, had:

1. Outstanding natural resources with high potential for nature tourism development
2. Presence of human communities around the area, with clear institutional structures
3. High degree of community enthusiasm to participate in the management of the area; and
4. Accessibility and safety for nature tourism and recreation development and use

3.1.2 Study Site

The selected site for this research, in the Lubombo Mountain Range is a micro-watershed of the Madhimbe River and a tributary of the Umbeluzi River (see Figure 3.1). The Goba watershed has an area of approximately 10 000 ha in the Goba Post Administrative Area, approximately 70 kms West of Maputo City, Mozambique. The Umbeluzi River borders it in the North, the Swazi Kingdom on the West, and the Mugoane and Bassope Mountains on the East. Area coordinates are from 32° 04' 26" to 32° 09' 00" East and 26° 11' 15" to 26° 20' 00" South. The altitude varies between 100 to 600 meters above sea level with an average annual precipitation ranging from 600-800 mm. The average annual temperature is about 21.9° C, with a maximum temperature of 27.2° C and a minimum of 16.6° C, varying with altitude (see Figure 3.2). The climate is sub-tropical with the highest rainfall occurring between November and February when temperatures also reach the highest levels of the year. Cool dry winters occur from April to August and hot wet summers from September to March. The average annual evapo-transpiration is about 122.5 mm in Goba village and the average annual relative humidity is 73%. The hilly terrain of the Lubombo Mountain range influences the ecological conditions of Goba; especially the soils because of the topography and drainage network pattern. Soils are of heavy geological origin and have moderate clay content with moderate organic matter and high water retention capacity. This makes them highly suitable for agricultural purposes. The steep terrain, however, is a major physical limiting factor for agricultural production.

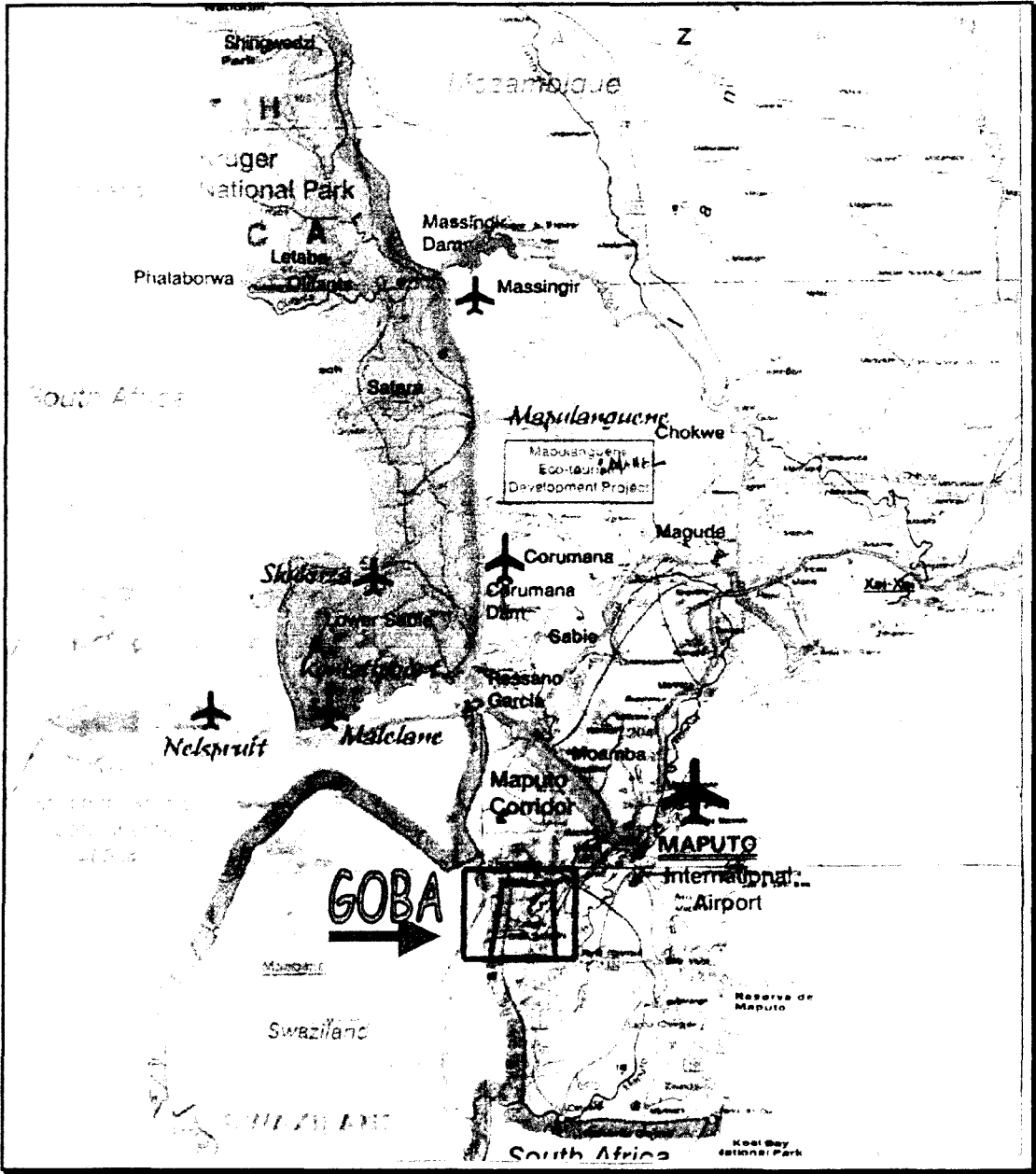


FIGURE 3.1 Geographical Location of Study Area.

The continuous use of forest resources for economic purposes and annual wild fires has caused severe changes in the structure of the original vegetation. The natural vegetation is largely savanna woodland with unusual semi-unspoiled and unspoiled patches of *Androstachys* groves (on rocky escarpment slopes) and of Afro-temperate forests (on southern escarpment slopes) as well as thicket (on ravines).

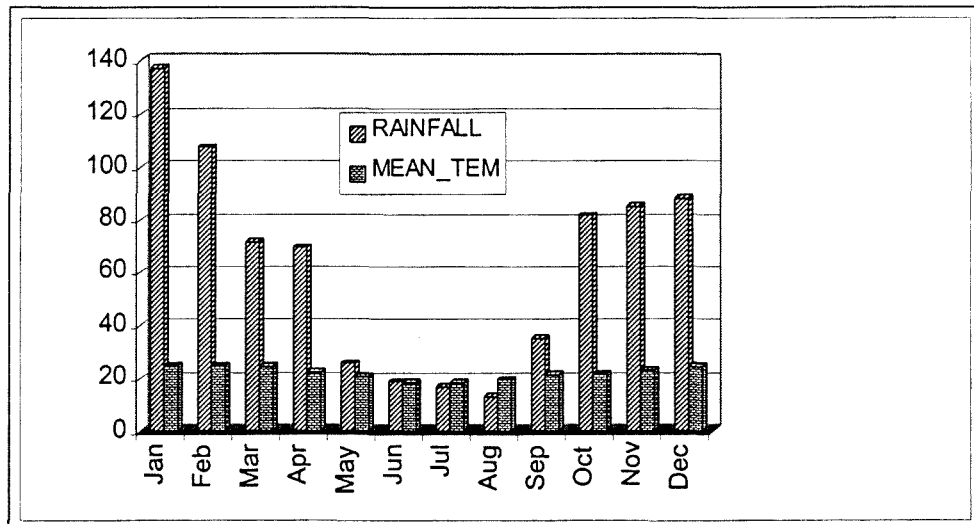


FIGURE 3.2. Mean rainfall (mm) and temperature (TEM) (°C) of Goba

Charcoal production is the main economic activity of Goba's communities. Approximately 80% of the population are involved in charcoal production. In addition, virtually all households are involved in subsistence agricultural production. Agricultural production consists of a traditional maize-cassava and bean system with fallow periods, and extensive irrigated vegetable production.

The principal Goba community consists of a dense settlement of units in the village, along the Umbeluzi River as well as a more dispersed community along the Madhimbe river valleys. These two areas together comprise a total of approximately 320 households, with an average of 4-7 persons per household. The majority of the inhabitants are new settlers from outside of Goba comprising demobilized soldiers and former employees of charcoal barons from Maputo. Goba is connected to Maputo City by a tarred road and a railway line. The area has a reasonable road network (not tarred but generally in good condition during the dry season).

3.2 Methodology

The study methodology is shown in the flowchart (see Figure 3.3). This comprised two kinds of research techniques: resources analysis using Visual Absorption Capability (VAC) assessment and market studies.

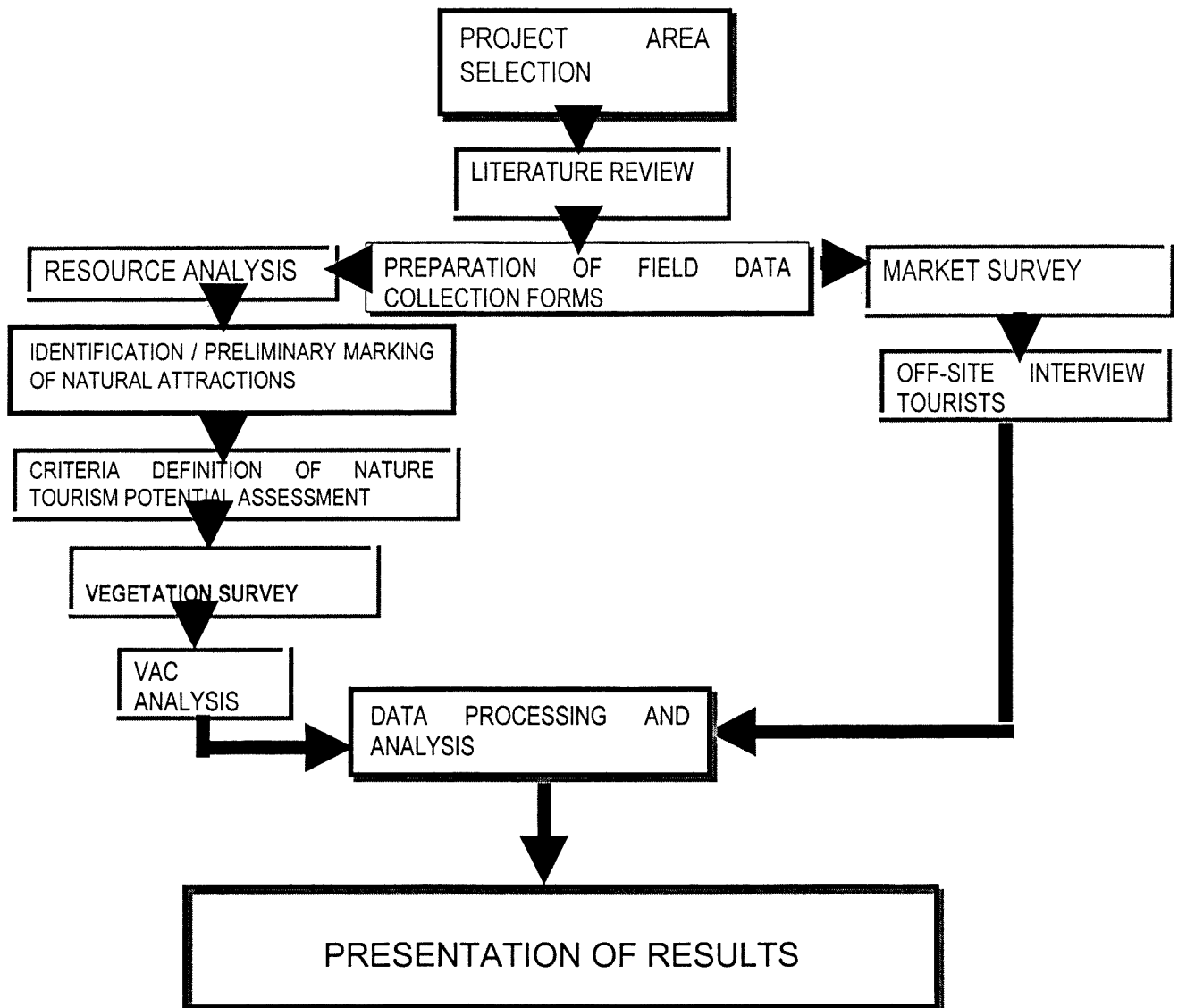


FIGURE 3.3 The general Methodology

3.2.1. Market Research

3.2.1.1 Target population and data collection

An off-site interview survey method was selected for the market survey. This was due to the fact that the Goba area has not yet been developed as a tourist destination. Existing tourist destinations in the region provided useful information on tourism market trends for planning and management. Direct face-to-face interviews were conducted at selected recreation sites (beaches) and airports in the region with a sample of foreign tourists. Younger tourists of below 18 years were excluded from the population sample because the questionnaire had socio-demographic data (e.g. family annual income) and other data that would not apply to this age cohort. A total of 100 questionnaires were used.

3.2.1.2 Research Instrument

The questionnaire was carefully designed to obtain primary research information for the research study objectives as well as to provide respondents with adequate and accurate information that was necessary to make them fully aware of the hypothetical market situation. The research scenario was also carefully worded for the respondents to grasp the concepts of tourism and development. The research instrument had two parts (Appendix A). The first part was designed to gather information on general travel habits and preferences, such as frequency of travel, length of stay at the attraction, trip duration, origin, party composition and nationalities, purpose of visit and travel expenditure. The second part was designed to gather information from a hypothetical market scenario, such as the percentage of time and satisfaction that tourists attribute to each of four pre-selected attractions. i.) Beach/diving/fishing; ii.) Wilderness assets, which include bird watching, spring water places and nature trail; iii.) Cultural tourism; and iv.) Wildlife viewing/photographing/hunting. Socioeconomic and demographic variables such as age group, gender, and family annual income group were assessed.

3.2.1.3 Expenditure Function regression model

Given the importance of expenditure parameters in influencing tourists and the profits to be made at the tourism destination, it was decided to use expenditure function techniques as an aid to the valuation of the economics of tourism in the surrounding areas of Goba. Per person per day expenditures in Ponta d'Ouro, Costa do Sol beach, Maputo Airport and Bilene, Vilanculos and Inhassoro beaches were regressed against the following explanatory variables: monthly household income, estimated total budget, gender, and country of origin. The following expenditure function was estimated:

$$Y = b_0 + b_1TB + b_2 \text{Sex} + b_3CO$$

where Y = the average expenditure per person, per day in Mozambique for each visitor party; b = the estimated coefficients; TB = the total estimated budget in USD for whole trip away from home; Sex = the gender; CO = an identity number for each of the countries of origin (1 to 21); A multiple linear regression was performed. Multiple regression technique was used to investigate the relationships between the average daily expenditure per person and above mentioned variables. Chi-square tests was used to examine gender contingencies between South African tourists and tourists from other countries. Analysis of Variance (ANOVA) was used to test the average expenditure per tourist against the country of origin and to estimate the daily tourist expenditure per country. This was used as a measure of economic benefit as well as to test homogeneity of proportions and examine whether differences existed across different activity groups.

3.2.2 Tourism Attraction Resources Analysis

The aim of this study was to produce detailed ecological descriptions of the attraction sites to guide nature tourism development and management with minimal degradation. Forest resources are the base resources for tourism attraction sites assessment. To provide such environmental and ecological descriptions, topographic maps (1:50 000), and aerial photographs (1: 40 000), vegetation and land cover maps (1:250 000 and 1: 50 000) were used to describe vegetation cover types; landscape and land use patterns (see Appendix B). The Visual Absorption Capability (VAC) model (Anderson *et al.*, 1979; Yeomans, 1979) was used as an ecological model approach to identify the individual attractions' sensitivity¹ level. The Visual Absorption Capability (VAC) model has predictive and prescriptive applications (Anderson, *et al.*, 1979). It is used in this study as a decision model to suggest a certain course of actions to be followed in response to management and development (Wier, 1994). These types of model form the basis of decision support systems and are increasingly used for natural resources management planning (Wier, 1994; Vanclay, 1995).

Tourism attractions were identified and pre-selected using criteria for assessment (Appendix C1 and C2). Five biophysical factors considered important and more stable to variation were collected to perform VAC analysis. For management and conservation prescriptions two plots in each attraction site were sampled and analyzed for development purposes (see Appendix D). The methods used for VAC analysis are briefly described:

Stage 1. Selected social and environmental/ecological variables were taken into consideration at this stage. Criteria for assessing tourism and recreation potential were used. The evaluation of these variables separated:

¹ High Sensitivity (S1), Medium Sensitivity (S2), Low Sensitivity (S3)

- (a) Land with agricultural potential
- (b) Grazing land,
- (c) Village area,
- (d) Land otherwise unsuited to tourism development
- (e) Private areas

In selecting areas for tourism, consideration was given to the fact that Goba is a water catchment area that needs protection.

Stage 2. Perform biophysical factor analysis of selected attractions. Further consideration was given to the same variables as in stage 1 as well as additional ecological, environmental and social variables for analysis and location of identified areas. The biophysical factor analysis was based on vegetation, soil, and surface geology characteristics and limitations as recommended by Smiet, (1996) and Yeomans, (1979) for catchment landscape and relief. The method is briefly detailed below. Of specific interest to VAC was the identification of major limiting factors to recreation tourism development based upon soil texture, soil depth, drainage, flooding, vegetation density, vegetation diversity, and sensitivity to development. Social and cultural factors and man-made constraints were also categorized in the landscape. Utilizing the five factors below, the following rating system governed all VAC evaluations, i.e., $VAC = S * (E + R + C + D)$ where S = Slope, E = Soil erosion, R = Vegetation regeneration potential, C = soil and rock color contrast potential, and D = and use / landscape diversity. A rating system was then established as tabulated in table 3.1, where the higher number carries the highest VAC. It becomes apparent that, since VAC values can vary from a low of $1*(1+1+1+1) = 4$ to high of $5*(3+3+3+3) = 60$, VAC ratings can be assigned (see Appendices D, E1 and E2). The VAC rating system facilitates decisions on placement of tourism infrastructure by identifying areas that can be developed without losing their rurality and environmental functions. The resulting VAC classes can be categorized as highly sensitive areas, both physical and visually if they have a lower VAC value (less than 28) and lower sensitive areas and suitable for modifications without visual and ecological impacts on the landscape (see Appendix F). VAC system allows the managers to assign the visual management classes that stratify landscape sites on a continuum from visually vulnerable to visually tolerant from the existing landscapes. The most visually vulnerable landscape is "retention-foreground" with very low VAC to be protected from human activities. The most visually tolerant landscape is "maximum modification", with a high VAC to be used for development (Appendix M). According to Anderson *et al.*, (1979) the resulting breakdowns are responsible of visual differences in absorption capabilities of the landscape, rather than statistical rankings or bell curve distributions. Statistical analysis however, have shown significant differences between VAC values ranging from 4 to 15, 16 to 27, 28 to 40, 41 to 50 and 51 to 60.

TABLE 3.1 Visual Absorption Capability rating system for development planning

Factor	Conditions	Rating
1. (S) Slope (Dominant and determining factor)	0— 10 % Slope Very gentle	5
	11 — 20 % Slope Gentle	4
	21 — 30 % Slope Moderate	3
	31 — 45 % Slope Steep	2
	45 % Slope Very Steep	1
2. (E) Soil Erosion Potential	Low Erosion Potential	3
	Moderate erosion	2
	High Erosion	1
3. (R) Vegetation Regeneration Potential	High Regeneration Potential	3
	Moderate Regeneration Potential	2
	Low Regeneration Potential	1
4. (c) Soil and Rock Color Contrast	Low contrast (e.g. , <2.5 or less hue)	3
	Moderate Contrast (e.g., 5 hue change)	2
	High Contrast (> 5 hue change)	1
5. (D) Land Use/Landscape Diversity	High Diversity of vegetation type; diverse and interesting topography and attractive Water bodies	3
	Moderate Diversity (little variety in vegetation or topography present)	2
	Low Diversity (no significant change in vegetation pattern or topography)	1

After Yeomans 1979, pages (172-181).

3.2.3 Vegetation cover types survey

A total of 18 circular plots of 0.05 ha each were sampled (two in each attraction site). The following data were collected on typical vegetation inventory cover method: (1) tree, shrub and grass covers were broadly estimated in per cent cover in each sampled area; and (2) vegetation were identified and tree and shrub species also counted in each plot. For grass species, counting was not done, as in many cases only one specie was present. Even in cases where two or more species were mixed, counting was not practical. Therefore, grass species were singularly identified for enumeration (see Appendices H and J): Other recorded data were:

- Dominant slope per cent was recorded in the steepest direction of the plot using a clinometer graduated in per cent and aspect was recorded, facing down the slope.
- Vegetation type was recorded. Tree, shrub and grass covers were visually estimated and recorded in per cent per site. Occurrence of

potential productivity/ vegetation recoverability. Indicator species in the understorey such as shrubs, or herbs, ferns, palms or climbers were useful indicators of site conditions and vegetation type.

- c) Dominate species and species associations were recorded.
- d) Few descriptive indicators of site were recorded. They are related mainly to types of disturbance, rather than to intrinsic factors of site for analysis, but they were seen as important in classifying plot level/site data at the time of analysis (see Appendix G).

- Fire, indication of recent forest fire
- Shifting cultivation- part of the plot has recently been felled and cultivated
- Skid trail- a skid trail passes through the plot area
- Rock outcrop – rock outcrops intersect part of the plot
- Swamp – indication of extensive and continuous waterlogging of the soil, including presence of stilt-rooted or swamp species.
- Gap – the plot intersects a natural gap formed by tree fall;
- Gully or embankment – a dry gully (as opposed to stream)
- Human –signs of earlier presence of human uses through cultivated species

These data were used for Visual Absorption Capability analysis, rating criteria, attraction sites descriptions, cover type description, vegetation type analysis and visual management prescription. For facilities development two sub-sites were sampled in each attraction site using rating criteria values that included socio-and biophysical factors (see Appendix F). This was done to allow selection of the site for the placement of possible facilities. The total rankings were compared to see whether differences in the values were statistically significant.

3.2.4 Data analysis

Visual Absorption Capability model (as given in Yeomans 1979) was used to describe ecological sensitivity. The VAC values were calculated using the formula in section 3.2.2. Analysis of variance (ANOVA) e MANOVA techniques were used for land cover analysis. In this case, only 16 and not 18 total plots were assessed because two sites (the Mbilambi Wilderness and the Sacred Lagoon) are located in the same area. The Sacred Lagoon was sampled for vegetation, slope and other variables that were similar to that of the Mbilambi Wilderness. The analysis was based on 16 units, i.e., 8 sites.

CHAPTER 4

RESULTS AND DISCUSSION: THE TOURIST MARKET SURVEY

The chapter gives results and a brief interpretation of the tourism market survey. Emphasis is on the international visitor profile and tourism market characteristics. The reasons to travel to Mozambique, the trip duration in the country and at the attraction sites and the trip composition are estimated. The average daily expenditure per tourist and per country of origin is assessed to evaluate the perceived local gain from the international tourism flows. From the results and discussion, policy implications and strategies are explored and suggested to guide planning and development of community-based tourism in the Goba area.

4.1 Results and Interpretation

4.1.1 Existing Tourist Markets

The majority of the international tourists to Mozambique come from South Africa (55% of the sampled respondents). Followed by other African countries, including expatriate workers usually based in Maputo Beira, Manica, and European countries, each with 16%. USA/Canada and Asia/Australia follow with 7% and 6% respectively (see Table 4.1).

TABLE 4.1 International Visitor profile and Tourism Market

Existing Tourism Market	N=88	%	Age Group	N=88	%
South Africa	49	55	18-24 years old	0	0
Other African Countries	14	16	25-34 years old	4	4.6
USA/Canada	6	7	35-44 years old	23	26
Asia/Australia	5	6	45-54 years old	29	33
Europe	14	16	55-64 years old	25	28.4
			65-70 years old	6	6.8
			71-75 years old	1	1.2
			76-80 years old	0	0
Purpose of Visit			Expenditure (average daily)	US\$	
Vocations/Weekend Beach	29	32	Average	47.00	
Visiting Friends and Relatives	8	9	South Africa	25.76	
Expatriates/Residents	4	5	USA	108.75	
Business	8	9	Zimbabwe	47.91	
Safari-Bird watching-Wilderness	11	13	Norway	5.55	
Wilderness and Beaches	9	10	Singapore	21.40	
Touring	4	5	Spain	225.00	
Conferences	5	6	Angola	28.34	
Curiosity	9	10	Poland	50.00	
Culture	1	1	Botswana	83.34	
Gender			Canada	166.67	
Male	50	56.8	Mozambique	62.82	
Female	38	43.2	Germany	131.06	
South Africa			Italy	2.50	
Male	28	32	Malaysia	106.00	
Female	21	23.8	Holland	75.66	
Other Countries			Switzerland	16.67	
Male	22	25	Namibia	32.25	
Female	17	19.2	Australia	44.45	
			England	13.34	
			Emirates Arabia	2.80	

Overall, African countries are the primary source of international tourists in southern Mozambique (71%) followed by some of North America, Europe and Asia/Australian market origins.

4.1.2 Purpose of visit and local attractions

The prime reason for tourists to visit Mozambique irrespective of the country of origin was to enjoy the warm beaches on vacations and weekends combined with wilderness experience in Mozambican conservation areas and game reserves and bird watching (32%, $n=29$; $SD=5.367$; $N=88$). Other reasons for attraction to Mozambique were: Safari/bird watching/Wilderness (13%); Wilderness/Beaches (10%); Curiosity/Peace (10%); visiting friends and relatives (VFR) (9%); conference attendance (9%); business (6%); expatriates working in Mozambique (5%); Touring/adventure (5%) and Culture (1%) (Table 4.1). The majority of visitors responding to the survey indicated a multi-destination itinerary that included vacations, safari, bird watching, wilderness assets and beaches.

4.1.3 Trip duration

In Mozambique the average length of stay at different beach sites was 5.62 days ($SD=5.98$), while the mean total trip duration length was found to be 22 to 28 days. Gender in the group composition strongly influenced the trip duration of the international tourists in Mozambique. The F test between gender and duration at $p=0.05$ showed this trend ($F_{critical}=15.466$, $df(1,85)$, $P<0.001$). The R of 0.39 suggests that the model's fit is acceptable. The correlation between gender and trip duration showed that tourist groups that included women tended to have shorter stays than those groups without women. Southern African tourists spent less time in Mozambique than tourists from America and Europe did. This was probably because tourists from South Africa had the opportunity to visit Mozambique often, because of short-haul distances. Generally the visits were limited to weekends.

4.1.4 Expenditure

A multiple linear regression was performed to investigate the relationships between the average daily expenditure per person and gender, total budget, and country of origin. The null hypothesis was tested at $p = 0.05$ level. The data were well described ($R = 0.728$). The explanatory variables were strongly and positively associated with expenditure (see Table 4.2.). The result indicates that the total budget among the visitors from a particular home country was the most significant variable ($b = 0.686$) in determining the average expenditure per person. As expected the relationship between this independent variable and the average daily expenditure was positive. An adjusted R^2 of 0.51 suggests that the model's fit is acceptable. The postulated H_0 that the slope of the relationship between the dependent and independent variables was

not different from zero; i. e, $H_0: R=0$ was thus rejected as shown by the results ($F_{\text{critical}}= 32.0294$; $df (3,85) P<0.001$); the probability of the H_0 being accepted was very low. However, a correlation of 0.728 should not be interpreted to mean that the three explanatory variables (gender, total budget and country of origin) characterizing visitors visiting to Mozambique could explain 73% of the variation in the average daily expenditure. This latter characteristic is instead, represented by the coefficient of determination (R^2), which is a direct measure of the proportion of the variance in a multi-variate distribution explained by a linear correlation coefficient. Thus 53% of the average daily expenditure variation that can be determined ($R^2=0.53$), so that the proportions of the variation that cannot be assessed from these explanatory variables is almost 47%.

TABLE 4.2 Regression Analysis Results relating expenditure to gender, budget and country of tourism origin

Variable	Standardized Coefficients	Significance of P
Gender	0.14	$P<0.003$
Total Budget	0.686	$P<0.001$
Country	0.116	$P<0.003$
Intercept	36.875	
$R^2=0.530$	$F=32.029, df (3,85)$	$P < 0.001$
Adjusted $R^2=0.514$	$R = 0.728$	

When the average expenditure per person variable was tested against the country of origin variable by an ANOVA test, the results were deemed significant at the $p = 0.05$ level ($F_{\text{critical}} = 3.17$ $df (19,64)$; $P<0.001$). The average daily expenditures per person were significantly different among countries of origins. The average expenditures per person per country are displayed in table 4.1. The average expenditure by foreign tourists in Mozambique was US\$47.00 per day, tourists from South Africa had lower average daily expenditure per person of US\$25.00 while tourists from USA, and Spain had US\$108.75 and US\$225.00 respectively. It appears that tourists from different countries differ in their way of budgeting individual daily expenditure when visiting the country. The tourists from long-haul origins tend to budget more than tourists that were geographically closer to Mozambique.

4.1.5 Ages and Gender

Males composed 57% of the sample, while 43% of the respondents were female. Of this number, 32% of the males were from South Africa (SA), while females from SA represented 24% of the total female respondents. However, non-significant differences were found between South African tourists and tourists from other countries in terms of gender ($\chi^2 (2-1)= 0.0047$ at $p<0.05$). In this study, South African tourists

had 4 males for every 3 females.

With regard to age, as shown in table 4.1, 60% of the respondents (N=88) were 45 to 64 years of age, 26% were 35 to 44 years of age, 9% were older than 65 and only 5% were 25 to 34 years. An average age of 51, varying between 48 to 54 years, was found. In this study no one younger than 25 years, or older than 76 years were found. The age group of 18-24 years was not represented in the respondents' sample and less than 18 years were not part of the sample as started in section 3.2.1.1. About 69 % of all surveyed visitors were over 50 years of age.

4.2 Discussion

4.2.1 Existing Tourist Markets

Overall, African countries are the primary source of international tourism to the southern part of Mozambique. The study was done during November and December 2000, which is a holidays period and appropriate for sunny beach trips. Assuming that distance, costs and reduction in risk and uncertainty probably contributed to African tourist flows to Mozambique, then South African tourists made better use of the opportunities than any other tourist. The relative political stability in Mozambique since the end of the war in 1994 may be a reason for these visits. It might also be that stability is perceived as creating conducive conditions for foreign investments in the country to be sought out by the visitors.

Other potential markets with higher disposable expenditures were visitors from North America and Asia/Australia origins. Unless the tourism destination is well known, tourists from long-haul distances are influenced by distance, cost opportunities and marketing efforts (Tideswell *et. al.*, 1999; Reid and Reid, 1997). In the case of Mozambique, tourists from these countries may still be fearful of the threat of land mines.

4.2.2 Purpose of visit and local attractions

Although a considerable number of the tourists visiting the country were on beach vacations and weekends, in general, visitors were engaged in multi-destination itineraries. These included safari, wilderness, bird watching and touring. Tourists, who said curiosity and touring were their reasons for visiting, might have sought the same tourism benefits. It is difficult to determine exactly what these tourists wanted to see in Mozambique. This constitutes an important potential tourist group for nature-based tourism in Mozambique. Likewise, visiting friends and relatives ("VFR") and conference attendance groups are potential tourists for nature-based tourism in Mozambique. These groups are said to be primarily an extension of the multiple-benefit-seeking sector. They involve an economic rationalization element in the trip to the extent that friends and relatives often provide free accommodation and thus enable financially

constrained tourists to travel (Tideswell *et. al.*, 1999). Visitors who state their main purpose of travel as “VFR” and for conferences might be expected to engage in multi-destination travel as well. Tourists nominating pleasure/holiday as their main purpose of travel are more likely to visit a larger number of destinations (Oppearmann, 1999). Thus, by promoting nature-based tourism with diversified tourism products this group (VFR) may also be attracted to the nature tourism market.

4.2.3 Trip duration

Gender in the group composition strongly influenced the length of stay for the foreign tourists in Mozambique. The relative short duration that is associated with the female factor in the group composition may be due to the fact that some of the tourist activities such as fishing, diving, and boating are preferred by men. Developing diversified recreational product linkages and packages would contribute to extended trip duration. This would maximize the benefit to both tourists and destinations in terms enhancing tourism experience and local gains. Trip duration varies tremendously and is usually destination-specific rather than market-specific (Wight, 1996). This information is important both from a destination-wide perspective and from an operator perspective, because it has strong implications related to product linkages and packaging.

Tourists from Southern African countries spent less time in Mozambique than tourists from America and Europe did. This may be related to travel time constraints and economic rationalizations, as tourists tend to maximize the use of the money and time invested in travel. The results are similar to those reported by Tideswell *et. al.* (1999), who found that tourists from New Zealand who were in group parties spent less time in Australia than those from more distant origins. Tourists from more distant locations are supposed to invest more time and money into their trip thus they will be more sensitive to the risk involved in travel. The opportunity for more visits given distance from home country may influence the length of stay at destination. Tourists visiting a long-haul destination will maximize the time, experience and the money spent by visiting more destinations. Trip duration is associated with the multi-destination itinerary that tourists normally are engaged in, to reduce the risk and uncertainty that is involved in travel.

4.2.4 Expenditure

The average daily expenditures per visitor differ significantly among countries of origin with high spending tending to be from tourists of long distance origin. The results are not consistent, as shown in table 4.1. Some origins were less represented in the sampled population and the analysis did not separate visitors into groups (e.g. business, conferences). The lower average daily expenditure per tourist (SA) of US\$25.00 in relation to average expenditure and to others countries can also be linked to the already

discussed advantages linked to the distance. This market is comprised mostly of self-catering well-off tourists, campers who bring along their facilities. Most of them visit beaches and islands in group parties, spending mainly on camping fees, wood fuel and local fruit. Another possible reason might be that South African tourists do not use packages offered by tour agencies. For instance, about half of all South African birders preferred to bird independently when abroad (Namibia, Zimbabwe, etc.). They cite expense and group sizes to be too large as reasons for avoiding organized tours (Turpie and Ryan, 1999). This makes the trip cheaper and more affordable, especially when camping at the destination. Turpie and Ryan (1999) estimated the cost of R 4,100 for all trips including travel cost, which is half of that offered by organized tours. These figures are similar and comparable to this present study. This study confirms previous similar studies.

However, average daily expenditure should be interpreted within the context of length of stay. Since long-stay visitors are low daily spenders or short stay visitors are high daily spenders (Reid and Reid 1997). In this case it is suggested that tourist agencies in destinations like Mozambique should have policy preferences as to the categories of spending they want to influence. Tourists who typically have low expenditures per day would be an appropriate market for stimulating other spending expenditures. Through product development and promotion of activities and attractions as a focus for destination marketing strategy to increase the average length of stay, this can be done. This seems to be a good way of avoiding overflows on fragile attractions like beaches and wilderness to compensate lower spending expenditures. There is lack of management guidelines and reinforced regulations for visitor management.

The differences in expenditures among various origins were consistent and the values were similar to other studies on beach destinations. Reid and Reid (1997) reported an average daily expenditure per tourist of US\$116.00, US\$82.00, US\$77.00 and US\$70.50 from USA, Canada, United Kingdom and Germany, respectively while visiting Barbados. The ability to pay, destination for tourism, type of accommodation, vacation activities, and opportunities for expenditure also influenced the average daily expenditures. In general demographic characteristics of the tourists' origins influence not only the spending daily expenditure but also the choice of destination and activities. The findings show that expenditures are typically influenced by factors such as origin of tourist and length of trip.

4.2.5 Age and Gender

Although the sampled respondents comprised more males than females, it seems that both genders are interested in the overall range of ecotourism experiences. For specific activities (e.g. bird watching, boating or safari), there may be slight gender differences. Turpie and Ryan (1999) reported that nearly two thirds of bird watchers in South Africa were men. These results confirm similar studies carried out in the region.

A significant finding was that 69 % of all surveyed visitors were over 50 years of age. Assuming the sampled population of tourists was representative, visitors in the country were older people, almost at retirement stage that were interested in relaxing on vacations. Assuming that Mozambique is currently perceived as a beach destination that could not be visited during the war, this age group can be accepted as visitors to beaches. These tourists might have visited the country long ago, before the armed conflict or during the colonial time, and are now revisiting the places because of the relative political stability. South Africans of the younger generation grew up knowing Mozambique only as a place of Marxism and civil war and subsequently as country where landmines, bandits, bureaucracy, blown bridges and bad roads proved formidable deterrents (Fox, 1999). Half of South African birders were between 40-60 years old (Turpie and Ryan, 1999). Prideaux *et al.*, 1999 found that 58 % of the surveyed foreign visitors to Australia were also over 50 years of age while Meric and Hunt (1998) reported that nearly 20% of surveyed respondents were over 60 years old in North Carolina travelers.

For example, nature tourists have been said to be older than the average tourist (Boo 1990; Backman and Potts 1993; Eagles and Cascagnette 1995); younger than the average tourist (Yuan and Moisey 1992; Chudintra 1993: 54 years on average (Fennel and Smale 1992); mid-30s to mid-50s in the Yukon, but mid-20s to mid-40s in the Northwest Territories (Tourism Research Group, 1988). However, young and well-educated people have been reported to be the main group of ecotourists at the present moment (Pepler¹, pers. communication). This variation seems to be related to the definition of tourists and attractions sought during visits. These findings are in accordance with some of the specialized tourism studies. The finding results are variable in terms of the average age of the tourist. Clear definition of the type of tourism may be useful for further age assessment.

¹ Comments made at eco tourism lecture, US in 2000

4.3 Implications of the Market survey results

4.3.1 Nature-base tourism planning and development at Goba area

Based on the discussion and below implication policies it can be understood that many issues must be considered where the development of tourism, especially nature based tourism in rural areas, is concerned. Tourism planners, tourism marketers and local stakeholders, must work together to establish a careful balance between the needs of the tourism market segments and the available resources of the destination to meet these demands. The challenge is to make sure that nature tourism does not occur unplanned wherever there is a demand for it, but that all the stakeholders plan together where nature tourism destinations should be established and how they should be managed. The following implications are suggestions from the market survey:

A planning process for natural resources should recognize the importance of promoting and providing diversified activities for ecotourists. Local communities that are interested in the economic benefit from nature tourism should explore means of providing saleable attractions with activities and overnight facilities that can attract tourists that ultimately increase visitors' expenditure.

International tourist flows indicate that the marketing strategy used in Mozambique is at present attracting Southern African tourists and a few American and European tourists. Currently, typical nature tourists, ecotourists and cultural tourists are not the main set of international tourism to Mozambique. Developing strategies to broaden their appeal, by carefully planned nature-based tourism facilities in rural areas that use outstanding natural resources as attractions, can be a major policy. To explore the potential multi-destination itinerary groups that are interested in nature and environmental education, a tourism circuit in the Lubombo region should be established. This would not only maximize the economic gains, but also enhance the quality of the tourism experience. Tourists will then promote the destination and activities when they are back in their home countries.

Promotional strategies may be adopted and set up to expand the market in order to capture tourists from long-haul distances with high average daily expenditure. Given a constraint on visitor numbers, especially in fragile ecosystems, attracting visitors that are likely to make higher expenditure per day may be a good way for the rural communities to increase the economic benefits from nature based tourism.

4.3.2 Future tourism studies

The results presented in this study should be interpreted with care. The research was conducted in only the southern part of Mozambique. The sample may have been biased towards older and highly specialized tourists. The study was entirely done on beaches near Maputo (off-site of Goba area). Thus, it may not fully representative of all the segments of international travelers. Future studies should collect data from different border entrances, destinations and cities in order to control for the effects of demographics, origins and destinations. In this study, it was assumed that benefits sought out of vacations and weekend by tourists did not differ from those sought out from other types of nature tourism experiences (wilderness, safari, bird watching and cultural tourism). But, an unknown proportion of these tourists visited Kruger National Park before traveling to Mozambique. Future studies should focus only on nature-based tourism or ecotourism.

Despite these limitations, the results of this study should be of interest for beach destinations, economic development agencies, conservation and nature tourism planning agencies, hospitality industries as well as the country of origin and travel industries who wish to understand and promote nature environmental tourism. At the moment, there is no national focus for dispersing visitors and there is no indication of how these visitors enter the country or how they will travel when they arrive. In the absence of a national framework of tourism, the benefits of international and domestic tourism are not spread to a wider range of localities.

CHAPTER 5

RESULTS AND DISCUSSION: THE ATTRACTION RESOURCES ANALYSIS

This chapter provides the recreational resources evaluation and analysis. Recreation resources (forest, cultural, historical), tourism facilities and its conservation status are described. Ecological descriptions of these resources are analyzed with the Visual Absorption Capability model. Attraction sites are compared based on the VAC model results (data can be seen in Appendix K). Sampled areas in each attraction site are compared and discussed for planning and management purposes. Following this a brief interpretation and discussion of the tourism resource analysis in Goba are given. Other recreational facilities and cultural attractions are also discussed.

5.1 Results and Interpretation

5.1.1 Land cover types

Based on the studies done by DNFFB (1990), Mafacusser *et al.* (1999), Mubita (1998), Sandes (1999), Pereira (2000) and a ground survey, Goba forest area can be divided into 5 main vegetation cover types. These vegetation cover types are presented in table 5.1 with their general characteristics.

TAB LES 5.1 Vegetation cover types

Vegetation type	Sub-types	Location	Main species
Dense <i>Androstachys</i> woodlands		On rocky escarpment; or scarp edges or along convexities (flatter than ravine)	<i>Androstachys johnsonii</i> , <i>Spirostachys africana</i> , <i>Croton pseudopulchellus</i> .
Afro-temperate Forest		Very steep ravine heads; Steeper valley sides Aspect: south facing	<i>Podocarpus falcatus</i> , <i>Pittosporum viridiflorum</i> , <i>Kigelia africana</i> and <i>Pleurostylia capensis</i>
Thicket	Termitaria thicket	On hill peaks and crests; plains -Lubombo summits	<i>Diospyros mespiliformis</i> , <i>Sclerocarya birrea</i>
	Ravine Thicket	Low-lying areas at slope bottoms Ravine; steeper valley sides North facing slopes	<i>Sclerocarya birrea</i> , <i>Berchemia zeyheri</i> , <i>Combretum apiculatum</i> and <i>Acacia caffra</i>
Savanna Woodland	<i>Acacia caffra</i> woodland	South facing slopes; Steeper valley sides	<i>Acacia caffra</i> , <i>Strychnos madagascariensis</i> <i>Sclerocarya birrea</i> <i>Azalia spp</i>
	Open woodland	North-facing slope	<i>Combretum apiculatum</i> , <i>Strychnos madagascariensis</i> <i>Sclerocarya birrea</i> <i>Azalia spp</i>
	Grassland	On mountaintops	<i>Strychnos spp.</i> <i>Sclerocarya birrea</i> , <i>Combretum spp.</i> <i>Dichrostachys cinerea</i> . <i>Vangueria infausta</i>
Parkland		Near settlements and flat cultivated areas	<i>Trichilia emetica</i> , <i>Strychnos spp.</i> , <i>Grewia sulcata</i> , <i>Aannonna senegalensis</i> , <i>Vangueria infausta</i> <i>Sclerocarya birrea</i> , <i>Garcinia livingstone</i>

Descriptions of each vegetation cover type were based on the following authors: DNFFB, (1990); Pereira (2000); Mubita (1998); Mafalacusser *et al.*, (1999); Sandes (1999). None of these authors fully described these vegetation types in the above way as most of them used either the Malleux Physiognomic Classification System (Pereira, 2000; Mubita, 1998) or the Phillips Physiognomic Classification System (DNFFB, 1990; Mafalacusser *et al.*, 1999). These systems are slightly different and depend on the objective of study. For biomass assessment as well as for timber inventories, dynamic patches of Afro-temperate forests on very steep ravine heads and rocky escarpments and south facing slopes were classified and mapped as low forest with low density (crown cover 25-50%) that includes *Androstachys johnsonii* woodlands. Others like, DNFFB (1990) and Mafalacusser *et. al.* (1999) only mentioned that Goba has some patches of Afro-temperate forests that are actually mapped as Lubombo ravine thickets. The reasons for inclusion in the near most similar cover type could be that of mapping scale or aerial photography mapping, the latter is based on aerial photo-interpretation skill. However, field surveys showed that these forest patches are not such smaller to be included in the most similar surrounding vegetation type during delineation. For the purpose of this study a compatible classification system that uses physiographic features (community structures) was used to characterize and map the vegetation types as seen in Table 5.2. Aerial photographs of 1:40 000 were used in combination with ground surveys. The detailed list of the plant species for each surveyed site including the slope, tree species, grass cover and shrub cover are given in Appendix I.

TABLE 5.2 Description of land cover types

A compatible classification system that uses physiographic features (community structures) is used for characterization of the vegetation types:

Dense *Androstachys* Woodlands

The Lubombo *Androstachys* groves occur on rocky escarpment slopes or scarp edges when well stocked; or along the convexities marking the change of slope from flatter terrain to ravine valleys. In this terrain type it is usually mixed with *Spirostachys africana* and *Combretum apiculatum*. This woodland normally forms a typical unistratal canopy. It appears as an even-aged woodland with a relatively high and well-established herbaceous stratum composed of grasses or herbs and slender stemmed shrubs of which *Croton pseudopulchellus* is the most common. Other constituent species of the *Androstachys* woodland are *Spirostachys africana*, *Berchemia zeyheri*, *Dichrotrachys cinera*, *Euclea natalensis* and *Strychnos sp.*

Afro-temperate Forests

As a result of the slightly cooler, moister conditions on the more mesic slopes as well as the high elevation, these Afro-temperate forests appear unique and are the remains of dense broad-leaved forest patches types with a fern/herbaceous ground flora and huge sub-tropical lianas and epiphytes. They can only found on the south facing slopes and in ravine heads of the Lubombo. A grass layer is absent and these forests are on rhyolites and stony soils but with a high organic matter content. Afro-temperate forest elements are *Podocarpus falcatus*, *Pittosporum viridiflorum*, *Kiggelaria africana* and *Pleurostyliya capensis*. Due to its broad-leaved and overlapped crown nature, this well preserved Afro-temperate forest type offers a cool and fresh environment conducive to nature wanders. They are always surrounded by small dense-canopied thicket vegetation (on steeper and drier ravines) which are of insignificant area to be delineated alone and comprised of *Atalaya alata*, *Bauhinia galpinii*, *Euphorbia triangularis*, *Holmskiotydia speciosa*, and other shrubs.

Thicket

Thicket occurs in low-lying areas at the bottom of the slopes, and is characterized by the abundance of *Sclerocarya birrea*, *Berchemia zeyheri*, *Combretum apiculatum* and *Acacia caffra*. On the Lubombo summits this forest formation appears in the form of termitaria clump – thickets. This forest sub-type is predominant on hill peaks and crest plains following the savanna. In its island form occurrences of woody elements remain discrete and extremely short (>4 m in height). Typical woody species are *Diospyros mespiliformis*, *Galpinia transvaalica*, *Allophylis melanocarpus*, *Azelia quanzensis*, *Euclea natalensis*, and *Sideroxylon inerme*.

Savanna Woodland

This forest type normally occurs on mountaintops and on moderately undulating terrain. It occurs on the Lubombo Range and the height of its wooden plant range between 4 m and 10-m height and it is strongly influenced by aspect. On the south facing slopes of valleys and ravines it results in a mesic formation of *Acacia caffra* woodland. In contrast, on the north-facing slopes appears in a xeric community (as open woodland) with *Combretum apiculatum*. However previous forest inventories referred to both as Lubombo Open Woodlands. In both communities the common associated species are *Pterocarpus rotundifolius*, *Azelia quanzensis*, *Sclerocarya birrea*, *Combretum molle* and *Strychnos madagascariensis*.

Wooded Grassland (Parkland)

With increasing pressure on the forest resources and selective removal of woody elements for fuel wood, carving building materials and clearing for cultivation, only edible fruit-trees are left near settlements, forming what can be termed "indigenous orchards," otherwise known as parkland. This vegetation cover is a result of both selective and protection of edible fruit-bearing trees during clearing for cultivation as well of by human seed dispersal of preferred fruits. The abundance of the following indigenous fruit-tree species and others is the main characteristic: *Strychnos*

spp., *Sclerocarya birrea*, *Trichilia emetica*, *Aannonna senegalensis*, *Vangueria infausta*, *Garcinia livingstone* *Manilkara spp*, *Mimusops spp*, *Grewia sulcata* and *Berchemia zeyheri*, *Dalium schlechteri*, *Cassia petersiana*, *Azelia quanzensis* and *Combretum apiculatum*. It appears as wooded grassland when, found far of settlements and non-cultivated lands.

5.1.2 Vegetation covers and slope pattern

There was a significant positive correlation between the slope (per cent) and tree and shrub covers (per cent) ($r_t = 0.81$, $r_s = 0.70$, ANOVA: $F = 65.69$, $p < 0.000$, $df = (10,5)$). There was a significant negative correlation between the site slope (per cent) and grass cover (per cent) ($r_g = -0.80$, ANOVA: $F = 65.69$, $p < 0.001$, $df (10, 5)$ (see Table 5.3).

TABLE 5.3. Correlation results between slope and tree, grass, and shrub covers in Goba area.

Variables	Means	Std Dv.	R(X,Y)	R ²	N	P- level
Slope	13.1111	11.390				
Tree cover	38.3333	17.489	0.81	0.658	18	0.000
Grass cover	43.0555	25.271	-0.80	0.643	18	0.000
Shrub cover	18.333	9.2354	0.6996	0.475	18	0.001

r_t = Correlation coefficient of tree cover; r_g = Correlation coefficient of grass cover; r_s = Correlation Coefficient of shrub cover

Both tree and shrub covers were to some extent mixed with grass component, especially in the woodland and wooded grassland that were found in the flat areas. On the ravines, riverine thickets and Afro-temperate forests however, this mixture was found only confined to transitional zones between forest types and to forest edges. Generally, in the interior, grass covers were sparsely distributed or simply absent (riverine and ravine thickets and Afro-temperate forest patches, respectively. Steeper and very steep ravine areas had more tree and shrub cover percentage per site. Grasslands and wooded grasslands prevailed at lower elevations, mountaintops, and crests, while open forests (thickets, ravine thickets) and dense forest (*Androstachys johnsonii* and Afro-temperate forest) dominated at higher elevations.

MANOVA analysis was performed using grass and shrub covers as co-variants in relation to slope and tree cover giving the following results: ($F (10,5) = 69.33$; $p = 0.0001$). Site analysis results as shown in Table 5.4 indicated that slopes from 0% to 14 % had more grass cover (80%) than tree and shrub covers. On slopes of between 15% and 35% the tree cover dominated the grass and shrub covers in more than 60% of the area. Table 5.3 presents the correlation results between slope and tree, grass and shrub covers

respectively (see Appendix I). For the slope greater than 35% tree cover dominance did not change much, but tree and shrub covers dominated the area both comprising 85% of the total land cover. In fact a crown cover of 100 per cent is theoretically possible in wooded savanna or woodland and shrub formation (thickets, shrub savanna).

TABLE 5.4 MANOVA result: Slope and Tree cover vs Cov Grass and Shrub covers.

Means (Site analysis)	F (10,5)= 69.33; p=0.0001		
Slope (%)	Tree Cover	Grass Cover (Covar.)	Shrub Cover(Covar.)
0	10	80.0	10.0
2	32.5	50.0	16.25
3	20.0	70.0	10.0
5	22.5	67.5	10.0
10	22.5	65.0	12.5
15	60.0	30.0	10.0
20	47.5	27.50	25.0
25	55.0	15.0	30.0
30	55.0	15.0	30.0
35	60.0	15.0	25.0

However in that case a continuous dense grass cover would not exist: in most instances a more open character of the vegetation prevails. It appears as *Acacia caffra* woodland on south-facing slopes (humid) and as *Combretum apiculatum* woodlands on the north-facing slopes (dry) that are more open. Soil types and climate also influenced this strong differentiation.

Previous studies have reported that regular and moderate burning promotes the dominance of *Themeda triandra*, *Imperata cylindrica* and *Capillipedium parviflorum* on the mountaintop and flat grassland areas in South Africa and in India (Scotcher, 1982; Singh *et al.*, 1984). *Themeda triandra* is the most widely spread grass species in all the surveyed sites. The promotion and enhancement of this grass species could be a result of more efficient fertilization due to ash and/or reduction of intra-specific competition. Long-term studies are needed to improve our understanding of the effects of grass fires in this area.

5.1.3 Visual Absorption Capability analysis

A total of fifteen sites at Goba, which had been pre-selected for nature tourism development were visited and their recreational potential assessed through a defined criteria score. Out of the 15 sites, only 9 were selected to perform the Visual Absorption Capability (VAC) analysis. The selection was based on the uniqueness, characteristics, potentialities and weaknesses of each asset. At each attraction, two sub-sites visually selected were sampled for facilities development purposes using a defined criteria-ranking system. Following Visual Absorption Capability values are presented as well as its corresponding Sensitivity level

for selected sites and attractions (see also description of VAC classes in Appendix E1 and E2).

5.2 Attraction sites selection and analysis

A total of 3 attraction sites representing 33% of the total surveyed sites, had moderate to very high Visual Absorption Capability values (see Table 5.5 and Appendix K). The Control had the highest VAC value (55), followed by Pico of Umbeluzi and *Androstachys* groves with high (50) and moderate (40) VAC values respectively. These VAC values mean attraction sites displayed a relative ability to absorb given land use without visual impact. In this case, disturbances due to prescribed infrastructure development. The sites were mostly found on gentle slope areas (mountaintops and crests) of grasslands and wooded grasslands. With effect, sites with high VAC can be managed more intensively than those with moderate / low VAC (see Appendices L1 and L2). When implementing the management regime this means adjusting the prescription within the constraint of the VAC to achieve it. The average slope of the area is the limiting factor. It mostly influences the others factors in degrading the environment through soil erosion during modification of an area for physical infrastructures (Plates 5.1).

TABLE 5.5 Visual Absorption Capability and Sensitivity level results

Nº	VISUAL ABSORPTION			SENSITIVITY
	ATTRactions	CAPABILITY	VAC CLASS	LEVEL
1	Pico de Umbeluzi	50 (41-50)	II	S3
2	Control	55 (51-60)	I	S3
3	Cruzamento of Quota	12 (4-15)	V	S1
4	<i>Androstachys</i> Groves	40 (28-40)	III	S2
5	Ravina 1	27 (16-27)	IV	S1
6	Mbilambi Wilderness	15 (4-15)	V	S1
7	Spring Water	12 (4-15)	V	S1
8	Sacred Lagoon	24 (16-27)	IV	S1
9	Botene Lake	21 (16-27)	IV	S1

1. Bold characters indicate suitable attraction for modification and facilities development.

2. These breakdowns are responsible of visual differences in absorption capabilities of the landscape, rather than statistical rankings or bell curve distributions (Anderson et al., 1979). There is a significant difference between VAC value ranges (4-15, 16-27, 28-40, 41-50 and 51-60)

Six attraction sites had very low (>16) and low (21, 27) VAC values. Cruzamento of Quota, Spring Water had VAC values of 12 each, followed by Mbilambi Wilderness with 15, all of which belong to the lowest VAC values class. Conversely, Botene had 21 while Sacred Pool and Ravina1 had 24 and 27 VAC values respectively. The last three belong to the lower range class of the VAC values. Both very low and low VAC classes correspond to high sensitivity levels (S1). Steeper upland slopes are normal sites, where changes are more conspicuous as compared to flatter ground. A low visual absorption capability rating in these areas would suggest management caution even in areas of lenient visual quality objectives, such as retention and partial modification.



FIGURE 5.1 The Goba landscape area.



FIGURE 5.2 The Mbilambi Wilderness area (Afro-temperate forest)

5.3 Discussion

5.3.1 Conservation status of vegetation cover, landscape and land use

The current forest conservation status of Goba appears to be primarily linked to the human economic activities that are a function of the local human population density. There is a clear dynamic spatial and temporal relationship among local relief (topography), land cover and human activities. The human activities may have had a direct or indirect effect on the local land cover pattern especially on accessible areas near the settlements. The direct impact of human activities (shifting cultivation, grazing, woodcutting and fires) on cover types appears to be largely determined by accessibility that is a function of topography (distance, rugged terrain and slope) (Plates 5.3 and 5.5).

The rugged nature of Goba terrain, which mostly determines its accessibility and its associated microclimate, is perceived as a barrier to both direct and indirect human impacts, particularly on the areas located far from the settlements. The natural conditions (topography) may have preserved the remaining unspoiled forest patches from human utilization and contributed to their conservation. Dense *Androstachys* groves, ravine thickets and the well preserved afro-temperate broad-leaved forest patches were found in inaccessible areas where cooler, moist conditions and steep slopes were present (Tables 5.1 and 5.2). Very steep slope may be less productive for grass owing to soil erosion (Alder and Synnott 1992). This is also explained by a lower fire frequency that promotes grass cover dominance, especially *Themeda triandra* that is more abundant in the area. Well-conserved thickets were even found near settlements, but the steep slopes of ravines protected them. The cooler and humid climate conditions, shaped by slope aspect, mostly acted as a barrier to fire, contributing to the present conservation status of these forest types. Usually, the grass-forest patterns of Goba's mountainous area are partially traced to orientation contrasts.

In general, fires seemed to be one of the human activities that had indirect effects on land cover types (through burning vegetation). Its effect was found to be unrelated to distance from the settlements, but it was strongly influenced by climatic conditions. Savanna woodland was found to be the most widely spread vegetation cover type through Goba area. This forest type and associated scrubland occur on mountaintops and on moderately undulating terrain. It is strongly impacted by fire and other human activities. The main dominant woody species are *Combretum apiculatum* and *Pterocarpus rotundifolius*, while the understorey vegetation is composed chiefly of *Themeda triandra*, *Andropogon contortus*, and *Urochloa mosambicensis*. The grassy stratum of *Themeda triandra*, *Panicum maximum*, *Andropogon gayanus* was sometimes mixed with *Hyparrhenia dissoluta* and *Veronica oligocephala*. Nevertheless, *Themeda triandra* is the most widespread grass species occurring across the study area and dominates the

grass complex of the Goba area.

Previous forest inventory studies reported that this vegetation type (referred to as *Pradaria arborizada* in Portuguese) was the most widely spread vegetation type that comprises 45% of the total Goba area (Sandes, 1999; Pereira, 2000). Ground survey showed that this vegetation type is normally found on mountaintops and on gently undulating terrain but it is mostly influenced by aspect of slope. The land cover pattern that is found throughout the Goba area will have implications for nature tourism development. The moist southern slopes of the savanna woodlands are considered suitable for general recreation development due to their high potential of vegetation recoverability. Secondly, because in these woodlands the occurrence of annual fires is naturally prevented. In general the attraction sites that are found in this cover type have high vegetation recoverability potential and consequently high VAC values for development. Thus, if they are to be used for nature-based tourism development while maintaining the natural ecological functions for conservation purposes, Goba communities should adopt a strong and sound conservation and management strategy with the focus on ecological carrying capacity as suggested by (Wells, 1997).

Near the settlements and accessible areas, the main extractive activity in the forest was woodcutting for charcoal and woody fuel of preferential species (Pereira, 2000; Mafalacusser *et. al.*, 1999). The incidence of tree cutting by the locals is determined largely by accessibility, which is a function of topography (distance, rugged terrain and slope). Thus, the density of these forest types near the settlements was more influenced by human activities (grazing, fires, wood cutting and subsistence agriculture) compared with of the same found distant of settlements. Fuel wood is the only source of energy in the water catchment, but the lucrative charcoal activities are driven by energy needs in the big urban centers (Tsamba and Soto 1997). For local use the communities normally collect the dead wood. They only cut trees when applying shifting cultivation. Conversely human activities seem to have indirect effects on those land types encountered very far from the settlements through burning of vegetation.

About 60% of the Goba forest area has been allocated to charcoal production. Only 40% of the area is reserved for protection of which 16% falls on the total protected zone (Pereira, 2000). The average annual extraction rate at the water catchment level is estimated as 3000 tons of fuel wood /year and 1.130 m³ per year for timber from all forest types that including grasslands (SPFFB, 1999). The concern is that growth studies for these forest types have not been done to assess whether this level of extraction is sustainable. It is expected that any increases in charcoal demand from urban centers will produce a negative impact on Goba catchment. Charcoal production may promote social welfare in the short-term, in the long-term however, it may be expected to cause negative impacts on the natural ecosystem of the Goba water catchment functions, especially with improved accessibility.

It has been shown that the ongoing human intervention has to a certain extent produced a simpler

mosaic landscape, which still remains diversified. Meanwhile, it is known that many ecological phenomena are sensitive to spatial heterogeneity and fluxes of organisms, materials and energy within spatial mosaics (Pickett and Cadenasso 1995 quoted in Kammerbauer 2001). There is a perception that the current trends in natural forests use intensification in Goba water catchment area, including charcoal production, require a more sophisticated monitoring approach that considers a more integrated and inter-sectoral vision. Rural policy interventions are needed to overcome the limited capacity of the poor people in these marginal environments to invest in long-term improvements of the natural resource base.

Basaltic mountains dominate the Goba landscape, with mountainous landforms at higher elevations and hilly landforms at their lower slopes. Valleys have been incised into mountain and hill slopes. They are generally narrow and deep at high elevations and more wide and shallow at lower elevations. These landforms are covered by natural forest, wooded grassland, grassland and shrublands. On the riverine zones and natural drainage networks develop dense thickets completely dominated by trees and shrubs.

5.3.2 Attraction sites analysis

The Visual Absorption Capability (VAC) results indicated that the area has well-conserved and differentiated natural landscapes. All selected sites generally have the potential for tourism and recreation uses, but only one third of the sites are suitable for facility development. The suitable sites have moderately high and high VAC values, equivalent to moderate and lowest sensitivity levels (S2, S3). These VAC values mean that these sites have a relative ability to absorb impacts that are produced by human modification activities with a minimum negative effect on the visual and ecological quality of the landscape (Table 5.4). There are no absolute absorption values in the management decision-making (Jubenville *et al.*, 1987). This relative absorption is a function of landscape character, primarily topography and vegetation. Adjustments in management prescriptions are needed and these should reflect the proposed land use (tourism facilities and use) development. Mining and timber harvesting may not be absorbable, even though a particular landscape has a high VAC value. Conversely, overgrazing can create negative visual impacts similar to other systems, but it would take longer to become noticeable because of the additional pastures (Blau *et al.* 1979). Fire, which is one of the major problems in recreation areas, is a more serious threat on the dry, windswept upper slopes than it is on the lower slopes (Jubenville *et al.* 1987). The visual impact of burning is associated with the psychological effect of fire (Blau *et al.* 1979). This effect lasts until new secondary growth becomes visible. The areas for development should follow the standard management philosophy of preventing all fires.

The visual impact of site construction will probably diminish over time, because vegetation manipulations are most noticeable within the first five years after implementation. The area should maintain

its environmental functions, natural appearance and rural cultural life style. Developing facilities for tourism should be implemented without damaging the attractiveness of the landscapes. Occupation of flatter rather than steeper slopes also reduces the visibility of change according to Litton (1977). This means that the recreation area and facilities should be located on gently slope areas that have deep, well-drained soils of medium textures. Suitable attraction sites have these physical characteristics.

Sites with a low visual absorption capability (high sensitivity level – S1) are unsuitable for physical development. Their biophysical attractors (landscape, geology, topography, forests, lakes, etc.) however, are considered focal points of tourism and recreational use in the landscape, regardless of managerial actions (Jubenville *et al.*, 1987). The core of tourism and recreation opportunity is the specific biological and physical attributes of the site and this is true for the sensitive attraction sites of Goba. This is what attracts people. When the decision is to expose the highest sensitivity areas to least change, there are some consequences that may not be desirable in the long-term (Kaplan, 1979). But, the desired ecological and social conditions should be strictly observed and should be based on specific standards of recreational uses if these sites are to be used for tourism and recreation. The optimal economic solution for the nature-based tourism development will probably only coincide with the conservation objectives of Goba catchment area, given the constraints to maintain a defined standard of environmental quality (Wells, 1997; Lindberg *et al.*, 1996; Whelan, 1991). The VAC values confirmed the differences in the quality of recreational sites through visual qualities of the landscapes.

Despite these sensitivity problems, the current status of the local natural resources suggests that nature-based tourism development may be an important alternative if environmental conservation may effectively be combined with economic development for the remote rural area. Limited development of infrastructures (including roads) should conserve these biophysical attractors. Environmental deterioration due to tourism overuse often occurs in mysterious increments that makes the prediction or assessment of the point at which irreversible damage begins a difficult task (Wells, 1997). Improvement in facilities may bring too many people to Goba. It is therefore not economically advisable to spend much money in developing sensitive areas and then instituting a limited entrance system to achieve the desired ecological equilibrium. The developmental strategy should thus rely on the limitation of visitor numbers as the most obvious method for managing the negative impacts. The rationale behind resource allocation through the VAC model is the establishment or maintenance of a particular equilibrium. This is commitment to planning according to certain goals and programs that are considered best to maintain the desired use pattern. The results of the market study indicated that although tourism initiatives in these areas may not attract large numbers of visitors, those more environmentally specialized tourists who are willing to pay for the locally developed and packaged products may compose this limited number of visitors. These products may be in combination with the provision of facilities for overnight accommodation and environmental education

activities as the main tourism products.

The Goba Water catchment has well conserved and visually differentiated natural landscape with suitable qualities to develop sensitive and primitive nature based tourism. This implies that the Goba area does not only need careful planning for such development, but that the development must not mimic the mass tourism style that overexploits the natural resources that are being sold to tourists. Therefore, given the constraints on environmental setting of the main local landscapes, Goba water catchment should only develop a more primitive portion of the tourism recreation spectrum and should have fewer facilities consisting of small-scale buildings. These facilities should be more rustic in character with less service and more emphasis on self-reliance, even on the sites of high VAC values.

5.3.3 Local tourism facilities and cultural attractions

The Goba area is unique in its appeal with five forest types of which *Androstachys* groves; afro-temperate forest and dense ravine patches appear well conserved. These forest resources form a base for tourism development. The area is close to the Maputo City (with an international airport) and to Swaziland. It is located in the Spatial Development Initiative zone. The Spatial Development Initiative (that includes South Africa, Mozambique and Swaziland) aims to attract new investments to the region. The closest ecotourism facilities in the area are Mlavula Nature Reserve and Sheula Mountain Camp. This makes the area part of the regional tourism circuit. Inhaca Island, Costa do Sol, Catembe and Ponta d'Ouro are the nearest beaches in the region. It is possible to include the area as part of an international tourist circle because of its proximity to Swaziland and South Africa. It is however, unfortunate that wildlife viewing is rare. In Mbilambi and Botene areas small game, monkeys, baboons and ground birds can frequently be seen. The area offers several natural and cultural features of interest due to the presence of the rural or tribal groups of which the Mbilambi and Mazie families are examples. The area has not been recreationally developed so that at present it cannot offer acceptable standards of food and accommodation to the tourists. If this area is to play a larger role between the Swazi and South African tourism systems, roads linking these two countries should be expanded and improved and the Goba Border Post should be used in the near future.

5.4 Implications of Resource Analysis results for development

5.4.1 Nature-based tourism development

The result of the resource analysis suggests differential management regimes for different attraction sites. Recreational sites, which have ranged from moderate to high VAC values, can absorb disturbances caused by vegetation and soil manipulations (development) and should be prescribed for physical infrastructure development (Pico of Umbeluzi, Control and *Androstachys* groves). Attraction sites with very low and low

VAC values with important biological and physical features should be earmarked for preservation or retention. The Mbilambi Wilderness and Spring Water that are situated on the very low and low VAC value areas (consequently with high sensitivity level (S1)), should be protected in order to maintain pristine environments. These areas should only be used for regulated recreation visits. These sites contain butterfly faunas that differ from the forest edges and from other disturbed sites. Because of their unique species, they need special preservation. For tourism and recreation, these areas offer an opportunity for butterfly and bird watching. The prescribed management objectives were due to the sensitivity levels of the VAC values, lower in high VAC and higher in low VAC sites, respectively.

Although the Visual Absorption Capability system has not been used as a tool for tourism planning and development in the region, its results produce strong evidence that VAC values can be used as indicators to develop community nature-based tourism. An interesting finding of the model results, in management classes, is that the higher scenic landscape tends to receive higher levels of protection. Protection of common landscapes may be just as important as for the higher scenic quality landscape. The protection of the common landscape serves to enhance and heighten the scenic quality of the unique or precious areas. VAC analysis provided foundations to link this development with other socioeconomic and biological aspects in order to adjust the visual management qualities (i.e. preservation, retention, partial retention, modification and maximum modification) of the different landscapes (see Appendix M). If the current status of these natural resources is to be maintained (e.g. the ecological functions of the catchment) then this demands an improvement to management of the ecosystem. Nature based tourism is an alternative that does not market harvested products on-site but, needs careful planning and support by government through commitment, policies and incentives. It may prove useful as a strategy for rural development.

In visual resource management, the ultimate success in protecting these areas of visual resource quality and the success in encouraging carefully development into those areas possessing high visual development suitable value may not be achieved through arguments based on visual values. We should seek to link visual landscape values with other landscape values (as done in this study) where this linking can help us to achieve our visual resources management objectives for tourism and recreational opportunities. Ecological and socio-economic sustainability will be reached therefore, by application of these planning guidelines. Policy implications and interventions from both studies will enable careful planning of facilities along with above proposed ecological product development (see Table 7.1). The survival and growth of new businesses and products is one goal, and the realization by a broad spectrum of the locals that conservation and business can help each other to thrive is another goal.

5.4.2 Future research and methodological improvements

Caution must be used in the interpretation of the findings of the VAC analysis. The model normally uses regional analysis to establish broad visual quality guidelines for implementation of basic land use planning. In this study it was used for site-specific analysis that establishes specific visual resource objectives for the site that may be of hundred hectares. VAC analysis needs intensive field checking for accuracy and applicability. It can be combined with GIS and remote sensing for geographical locational purposes. It requires intensive sampling and replications on the biophysical factors and a broader range of impacting activities. For the results the system requires considerable field-testing, modifications and refinements. Deeper studies are needed to determine those factors that were not considered. Future studies should consider vegetation pattern separately from the vegetation screening. This is because the crown density from the timber type maps is not the best evaluation for tourism pattern. The sites where the system is been applied should periodically be updated for continuing relevant management decisions. Improvement in the method should be made, as more research results become available.



PLATE 5.3 The Mbilambi Wilderness ground flora (fern/herbaceous) on dense-canopied thicket



PLATE 5.3.1 The Mbilambi Wilderness area (Afro-temperate forest) viewed from the South.

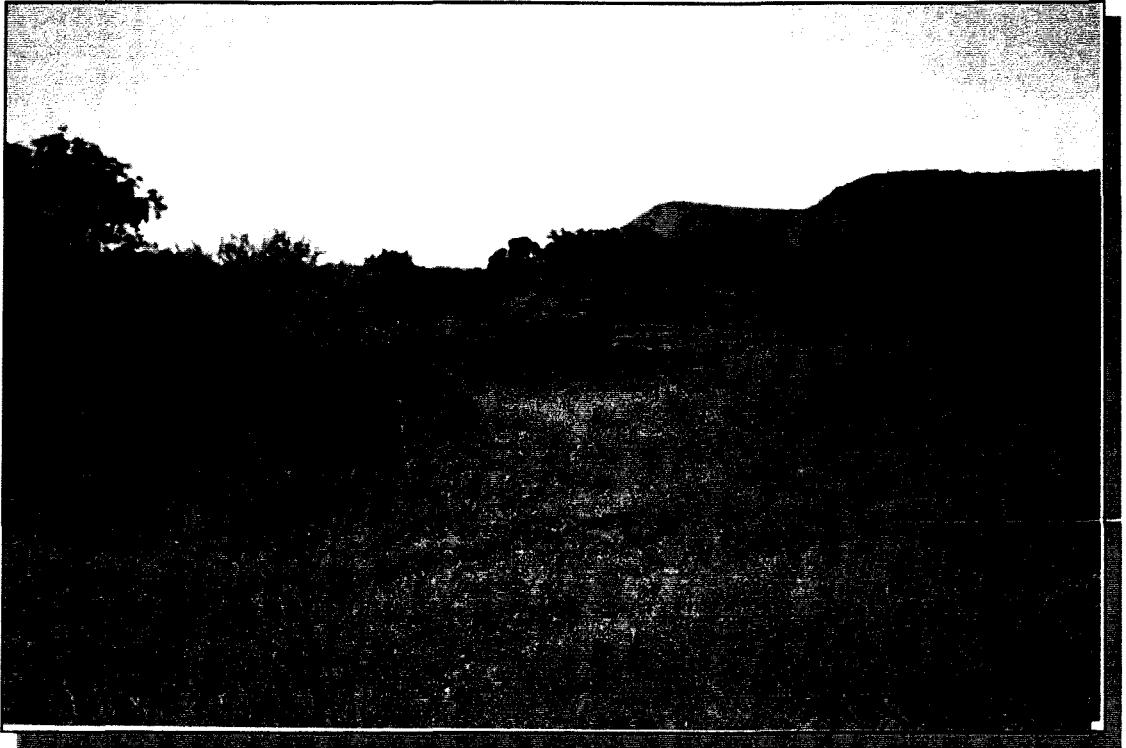


PLATE 5.4 Cleared area near Goba Village due to the shifting cultivation and charcoal production



PLATE 5.5 The Mbilambi Sacred Lagoon surrounded by Afro-temperate forest and thicket on the South and north facing slopes.

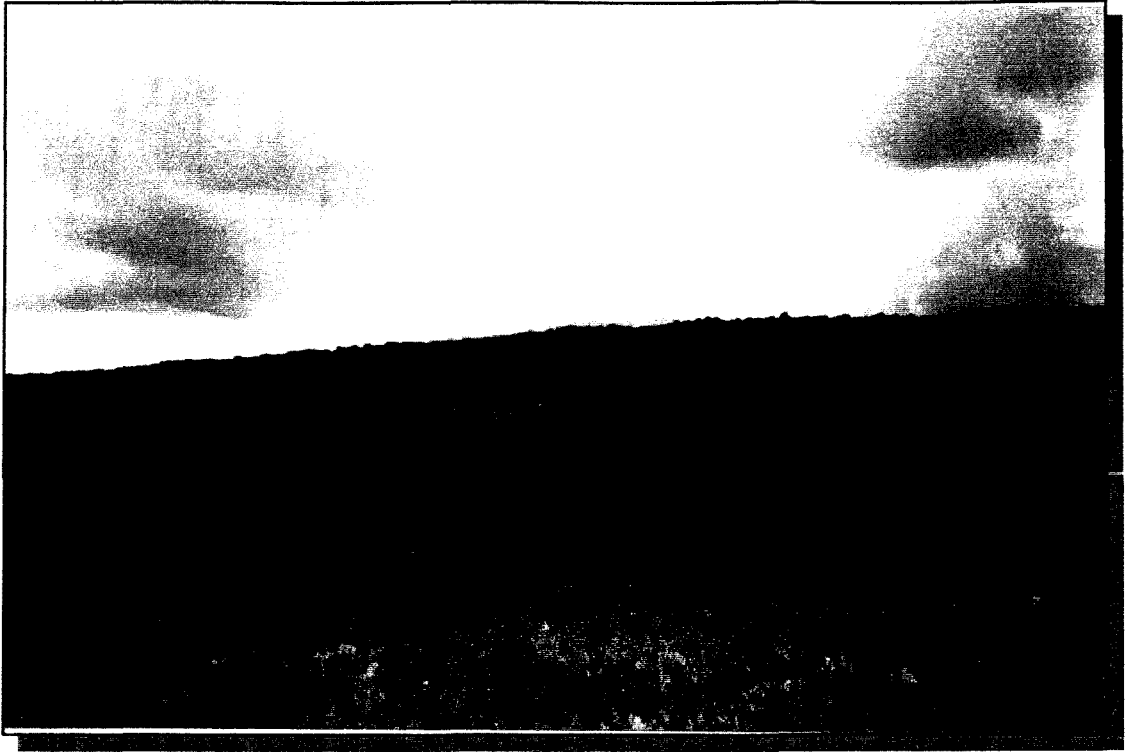


PLATE 5.6. The low thicket on the Mountain Slope and grassland on the flat terrain.



PLATE 5.7 The grassland area, more affected by wild fires

CHAPTER 6

GENERAL CONCLUSIONS

In keeping with the aims and objectives (see 1.4) for development of simple guidelines for nature-based tourism that contributes to the improvement of both conservation and management of the rural woodland areas and socioeconomic welfare of rural communities, detailed ecological analysis and information for every site was performed (Hjalager, 1999; Forbes, 1998; Wells, 1997; Lindberg *et. al.*, 1996; Wight, 1998; Jubenville *et.al.*, 1987; Whelan, 1991; Anderson *et.al.*, 1979 and Yeomans, 1979). Selected planning tools and research methods were used. Planning included consideration of people and their social conditions (Shelby and Hebelein, 1984; Young, 1991; Jubenville *et. al.*, 1987) and information on the impacts of visitors and of different management strategies (Forbes 1998; Jubenville *et. al.*, 1987; Wight, 1998, Wells, 1997; Lindberg *et. al.*, 1996). Market survey results were necessary to explore useful implication policies for nature tourism planning. These were to allow careful planning of tourism destinations that focus on ecologically and socio economically sustainability of the area.

Nature-based tourism development should be based on: "sustainable management " that is defined as managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety now and in the future. Tools for sustainability analysis in planning and managing nature tourism destinations such as Visual Absorption Capability (VAC) and the Limits of Acceptable Change (LAC) may assist these communities in assigning nature tourism development to attractions that capitalize on small-scale buildings for selected tourism segments.

Although VAC and LAC methods have not been applied as planning tools for tourism development in the region, some analysis and mapping was done to make some initial predictions. The model verified that scenic areas could be identified from the existing landscape resources with fair accuracy. The main benefits of the model are: (i) It is only efficient for mountainous landscapes in rural settings; (ii) It uses few biophysical factors which represent the most important factors for a specific area that are easy to collect in limited time with a small budget; (iii) Research is limited to recreational and tourism assessment which uses biophysical factors such as attractors for recreation. These are both perceived as limiting factors and recreation attractors. The VAC model, as a criterion for site analysis and selection does not only uses visual capabilities, but also the biological components of the landscape. In wild landscapes, the visual image communicates the meaning of the biological ideal.

On the basis of the studies the following conclusions that could assist policy considerations were reached:

1. If the outstanding natural resources can support a tourism venture and improve the living standard of the locals while sustaining ecological system functions, an opportunity exists for such development.
2. Local developmental policies that protect the local environmental assets should be set up to guide such tourism development.
3. Development incentives, local participation, donor agency and well-planned recreational facilities, communications to satisfy finding tourism segmentations are paramount for this initiative to succeed.
4. Specifically the resources analysis suggests that Goba catchment has well conserved and visually differentiated natural landscape with suitable qualities to develop sensitive and primitive nature based tourism. This sensitivity implies that the Goba area does not only need careful planning for such development, but that the development must not mimic the mass tourism style that overexploits the natural resources that are being sold to tourists. Resources analysis showed that the basic and logic developmental framework at Goba:

- (i) Should attract the more primitive portion of the recreation tourism spectrum;
- (ii) Goba should have minimal facilities and small buildings;
- (iii) These facilities should be more rustic in character with less service and more emphasis on self-reliance;
- (iv) Should develop and package local attractions (natural, cultural, and man-made);

Further recommendation is that for this type of developmental alternatives, the remote rural areas lying in fragile woodland ecosystem or/and threatened by economic activities, which seek any kind of development to improve their social welfare should be provided for in a developmental policy. This policy is to create and maintain conditions in which every rural area is given an opportunity to find its own economic future and thus maintain the local culture and natural resources.

Conclusion: With this policy framework if these communities can protect and market attractive quality of life amenities, maintain a relatively low cost of living, and offer serviceable link to global telecommunication infrastructures by attracting tourists and retirees, many of these communities will survive as local economies, and some may even thrive (Hite, 1997). An incentive planning method and sustained extension outreach effort in rural development, which focuses on nourishing local action at the grassroots level, will complement such a policy strategy.

CHAPTER 7

RECOMMENDATIONS FOR GOBA DEVELOPMENT

7.1 Nature-Base Tourism (NBT) Policy Development

With the VAC system detailed ecological information was gathered for each site, the Limit of Acceptable Changes will guide the community to develop tourism standards and indicators. LAC is a leading model for anticipating and preventing unacceptable environmental impacts. It was chosen for this study for its ability to anticipate and head off undesirable impacts. LAC recognizes that impacts will occur from tourism development and sets up a process to monitor changes before they reach an undesirable limit (Wight 1998). This approach was also used to plan sustainable nature-based tourism for the Curry County Project by the USADA Forest Service in 1993 (Forbes, 1998).

For the Goba area, a team composed of the local nature tourism board and other stakeholders will follow the proposed nine-step LAC process as follows:

- 1 *Identify concerns and issues*- these include spreading benefits throughout the Village, (avoiding crowds in locals' favorites spots) and identifying resources to be left alone and those to be mitigated.
- 2 *Define and describe opportunity classes*-these are resembled by the biophysical study [nature trail in semi-wilderness-*Androstachys* groves, wilderness (Mbilambi), cultural assets (Sacred lagoon, war memorial, cemetery wall, war ruins), and others. Descriptions of each class were based on given criteria and ecological factors as well as on human activities. The map of these areas has been developed for review and monitoring (see Appendix L).
- 3 *Select indicators of resources and social conditions*- indicators include number of new NBT businesses and jobs, occupancy rates at lodging facilities to be provided, average salary of (NBT) jobs, cost of living in Goba Village, recreational tourism revenue at resources management agencies, number of packages tours by season, and growth rate of NBT businesses.
- 4 *Inventory resource and social conditions*- *natural* attractions have been assessed and ecological information provided for each. Interviews and surveys were done prior to this study to assess the social conditions.
- 5 *Specific standards for resource and social indicators*- a matrix needs to be developed showing direct and indirect indicators of changes under the four categories of economic, environmental, social/ quality of life and visitor experience. Water catchment indicators will be chosen according to guideline given by Kammerbauer *et al.* (2000). Additionally, criteria that define a sustainable nature tourism business may be developed, with input from local citizen groups or NGOs. These criteria will be the ideal standards for monitoring and evaluation.

- 6 *Identify alternatives opportunity class allocations –*
- 7 *Identify management actions for each alternative –* Actions may be underway through nature tourism products being developed by local entrepreneurs. Hopefully, a non-profit nature tourism board is formed to sustain the concepts of the project.
- 8 *Evaluate and select alternatives –* see whether alternatives are needed.
- 9 *Implement actions and monitor conditions –* a monitoring plan needs to be developed based on the matrix of indicators for each of the four categories under step 5. Responsibility for monitoring falls with the various resource agencies and the non-profit local nature tourism board.

The key elements of the proposed NBT business will include:

- a. Utilize natural environments and provide opportunity for meaningful contact between people and the natural environment, either directly or indirectly.
- b. Provide opportunity for meaningful interaction between tourists and local people
- c. Create low or minimal impact on facilities, natural resources and local social structure whereby these elements can be maintain indefinitely;
- d. Employ at least 70 percent of its staff from Goba Village, or if the business is individually owned, staff would be located in the village;
- e. Promote and support local goods and services; and
- f. Visibly return time, materials and/or money to local projects that maintain, restore or enhance the natural environment.

7.1.1 Strategies of Actions

A credible organization (University, consultant or NGO) may be selected to work on-site, set up policies for recovering revenues from visitors, and to channel these revenues to accomplish business and resource management. Methods to distribute tax into different economic activities as well as how and where to use resource management, new product development, product improvement and marketing, salaries, and distribution are suggested as follows. A tax could be proposed and applied to all transient-lodging facilities like chalets, recreational vehicles parks, campgrounds, and other recreational facilities. A revenue-return should be proposed that place a flat tax on new residential development for the new settlers. Since substantial new development may threaten the tourism attraction of undeveloped area, a special tax on it would help to fund sustainable development initiatives and mitigation. Most funds in the early years should go to marketing until a visitor base is built. After that monies will be transferred to resource enhancement and revenue sharing policies that need to be developed.

7.2 Recommendations for Development

Nature-based tourism, eco-tourism and other new forms of tourism ventures have been blamed of not being sustainable in the long term. Once degraded, these destinations lose their aesthetic value, tourists are no longer visiting them, and consequently new attractions are opened elsewhere (see 2.1.3). To prevent this occurring in Goba Village sustainability should be built directly into the project through six mechanisms:

- (1) Designing a self sustaining, local, Revenue Return System (RRS);
- (2) Assessing local social values, through interviews and surveys, to avoid unacceptable impacts;
- (3) Assessing indicators of environmental and social changes, through the Limit of Acceptable Change (LAC);
- (4) Developing tourism products to attract a special tourist segment an environmental interpretative should be part of these products;
- (5) Business training;
- (6) Developing the marketing strategy for Goba Village.

7.2.1 Product Development

The development of tourism packages should be based on the market study and the ecological descriptions of the attractions and facilities. The fragility and ecological functions of Goba catchment area must be considered. The products in this area are perceived as a key to generating revenue and stimulating new local businesses. Assistance from an elected NGO and visiting experts to develop these products is however, needed. The Table 7.1 shows part of the possible new tourism products in Goba Village based in implication policies and strategies from both tourism survey and tourism resource analysis study results. These environmental products can be packaged and sold and can contribute to increase visitors expenditures and consequently local economic benefits. The main idea must focus on the patience needed to generate sustainable tourism businesses.

TABLE 7.1 New possible tourism products in Goba Area

Nature and Wilderness Trails	This involves site selection and designing a walkway linking diverse attractions. Sites have been selected and designing still has to be done. The product would capitalize on a combination of the recent research on butterflies, bird population as well as on the research interest in afro-temperate forest canopies and visit interest in broad-leaved old forests. The local interest must weight the outside interest on this product development. Funds are needed to bring in architects experienced in designing such trails. These trails have currently been found to attract visitors to tropical forest sites.
Mountain bike tours	The product should focus on developing a quality mountain bike tour route. This should use existing roads, but the roads should be rehabilitated. Financial support should be found to purchase 5 to 10 bikes. The business could start with half-day tours through <i>Androstachys</i> woodland, Mbilambi wilderness up to Botene lagoon.
Photography/workshops	Goba's scenery can be used as subject material, through development of new business that produces attractive postcards and photographic studies. Photographs showing local birds, butterflies, and reptiles can easily be sold to the tourist during visitation. Scenic sites must be identified through the area as well as networking with photographers and artist groups and packaging tours. Marketing can be developed through creation of a booklet on local photography and art opportunities.
Cultural tours	Goba has rich cultural background: This product may capitalize on the local historical sites such as a War Memorial, Cemetery wall, Sacred pool, cave paintings, war ruins and artifacts that can be found in Goba. All these attractions need to be restored and the access improved. There is need for documenting these attractions and tours should be guided by local people who know the history of the area. The proposed local museum should be equipped with local historical materials.
Stream restoration programs	For education purposes, this product could serve as demonstration to the tourist of the concerns that Goba nature tourism has in conserving the local environment. It should use ecological restoration methods to rehabilitate some of the ravine thickets degraded by fallow shifting cultivation. Saplings would be produced locally from seed collected on local species.
Indigenous orchards tours	This is, seasonally but important tourism product. It could use educational approach to explain how locals transformed native forest into orchards by selecting and planting seed. Various indigenous fruit-trees could be shown and the importance of its fruits for the local diet and the juices that can be produced from it, explained.
Lagoon tours	Lagoon tours can be organized. Goba has three lagoons that can be linked by the Mbilambi trail itinerary. This product could include Spring Water if arrangements are made with the private owner. This product needs to be documented and Botene Lagoon fish species should be assessed for promotional purposes. Because of the nature of the tour, a bird watching trip may be included, as well as a catch-and-release fishing trip in Botene lagoon and the Umbeluzi River. Day trips can also be organized with commercial fishers at Pequenos Lubombo Dam. This product should be based on the research studies and documented results of the fish species.
Environmental Interpretation Center	Special environmental issues from local studies could be explained to the visitors. Films on local life and community participation would be produced. Obviously the product needs specialist advice and elaboration.
Archeological tours	This includes a visit to Changanane riverbank to see the geological ocean remains. This product needs elaboration from an archeologist to be offered to the tourists.

Source: Adapted from Forbes, 1998 and Scheyvens, 1999

7.2.2 Business training

To provide business training and assistance for local entrepreneurs on existing business and guides, the project should select an experienced scholar or NGO. A series of workshops should also take place in a compacted time frame before the locals do anything. This will allow them to broaden their vision in business matters. Workshop topics may include:

1. Techniques for guiding nature field experiences;
2. The art of interpretation – mixing fun, reverence and learning
3. Nature lodge operation and management
4. Training and assistance for start-up businesses
5. Preparing to host nature travelers
6. Guide partnerships – businesses and community
7. Travel agent familiarization tours
8. Sustainable tourism opportunities for new entrepreneurs and existing businesses
9. Environmental threats to the tourism development and
10. Others

It is necessary to train guides in language (English), natural history, interpretative skills and visitor management. Continuous training for local businesses, utilizing local expertise resources and business specialists might prove to be useful to update all involved in nature tourism ventures. A tentative pricing of tours should be set up and discussed. There is a real danger of damaging relationships with tour operators if the starting price needs adjustment (dropping or raising prices afterwards). Facilitation is needed to help establish a starting price.

7.2.3 Marketing Goba as a Tourism destination

The target market for Goba nature tourism is the nature traveler. There is an increase in environment-based tourism that creates a demand for nature travel. This market can be reached with careful niche advertising in publications or television programs linked to the environment, natural history or conservation. Creating small package tours that are marketed through nature travel providers could help Goba capture this market. In the beginning, the marketing strategy should focus on the visitor within a day drive. Facilities for picnicking should be put in place. A market strategy for Goba nature Tourism should be designed. Some of the points to be addressed are:

1. Establishing a corporate image through brochures and postcards that highlight unique attractions –

scenery unspoiled forests and mountains as well as unique botanical features.

2. Establishing a focus group to make best use of advertising resources.
3. Investing in and maintaining a Website.
4. Developing a network with travel writers and editors, travel agents and other representative groups likely to send tourists to Goba.
5. Press releases and articles could be distributed on the proposed nature and wilderness and on the project in general. Attractive brochures should be developed using varying times about Goba nature tourism. The theme should reflect the rugged mountain nature of Goba combined with the unique botanical, geological and cultural features of the surrounding Lubombo Mountains.

7.3 Goba Nature Tourism development and Management programs

Because the national policy for rural development is too broad to be used in such a small area, it is necessary to design a local policy that focuses on the real aspects. A simplified rural development policy is therefore proposed for Goba Nature Tourism.

7.3.1 Policy Statement

1. To provide an acceptable level of nature tourism experience with minimum development needed to achieve Goba's management goals (socio-economic and ecological and maintain ecosystem functions).
2. To provide an acceptable limit of change that is needed to achieve the socio-economic and ecological management goals.

7.3.1.1 The objectives of tourism development management at Goba

1. To provide opportunities to the local communities for use of (in an integrated way) the outstanding natural resources to improve their social welfare.
2. To the management of the mountainous catchment system to maintain the optimum sustained yield of high quality water and to create nature tourism opportunities.
3. To provide opportunities to the locals to diversify their economic activities and to improve their socio-economic welfare.
4. To provide opportunities for research of the processes in natural habitat with the emphasis on endemic, vulnerable, endangered species and habitat restoration/enhancement.

7.3.1.2 Implementation

Goba nature tourism development should be done in phases

Phase I:

- (1) Delimitation and rehabilitation of existing cultural attractions
- (2). Clearing and delineation of the development area
 - a) Identify and prioritize elements of the Goba attractions, which should be developed (minimal development) and managed during the phase I of Goba Tourism development.
 - b) Delimitation and clearing of the main campgrounds (*Androstachys* groves, and Mbilambi).
 - c) Set up the picnicking facilities (Pico of Umbeluzi, and Mbilambi Wilderness)
 - d) Toilets and fire places
 - e) Building reception center

Phase II:

- (1) Delimitation and demarcation of nature and wilderness trails
- (2) Chalet buildings set up

7.4 Management Programs

For each of these management programs policy, objectives and explanation where necessary and guidelines for implementation. These programs are proposed ones to prepare and enhance the environmental quality, products and facilities needed for NBT development. The following are management programs:

1. Flora
2. Fauna Management Programs
3. Cultural and Historical Conservation Program
4. Restoration Programs
5. Public
6. Monitoring and Research
7. Services and Infrastructure Program

7.4.1 Flora Management

Policy and Objectives:

Policy: To conserve the diversity and to maintain the vigor of the indigenous forests and vegetation within the natural catchment ecosystems.

Objectives:

- a) The protection and management of the Goba vegetation cover is mandatory for nature based tourism.
- b) The management and conservation of unspoiled ravine, afro-temperate, and *Androstachys* forests.
- c) The conservation and protection of the Goba endemic plant species as well as vulnerable and endangered plant species.
- d) A fire reaction plan to reduce the risk of detrimental annual wildfires.

7.4.1.1 Project: Fire Management

Objective: To design and implement fire management plan to ensure plant species diversity.

Explanation: Savanna vegetation is a fire adapted veld type that annually burns in association with human activities. A rotational burning program should be adopted for tourism purposes in order to prevent the fires spoiling the appearance of scenery that tourists need to see. Fire management should be the major management practice in the Savanna biome systems.

Fire belts are required around potential fire hazards and a list of the local hunters is needed.

Implementation:

- a) Acceptable guidelines of fire protection should be followed in the appropriate season. Where needed, burning interval should be undertaken to reduce fire risk.
- b) Record and map all the details of each fire regardless of whether prescribed or accidental. Fires if not well managed can diminish the quality of the tourism spectrum and satisfaction.

7.4.1.2 Project: Fire Protection

Objective: To have an effective fire protection plan for the area, which includes the participation of all adjacent landowners.

Explanation: Annual fires of both human and natural origin occur and appropriate fire protection and fire reaction programs are necessary to prevent fire spreading both into and out of the Goba main tourism area.

Implementation:

- a) A draft fire protection plan should be drawn up for the Goba Nature Tourism Area, which takes into account the practicalities and the limitations of the terrain and the surround land.
- b) The plan should be discussed with the surrounding landowners and should be agreeable to all involved including hunters.

7.4.2 Fauna Management

Policy and Objectives:

Policy: To re-introduce and maintain the diversity of species, which naturally and historically occurred in the Goba area.

Objectives:

- a) To inventory and monitor the existing animal species in the area.
- b) To re-locate small and medium game of historical occurrence when and where applicable/practical.
- c) To monitor the current animal populations in the area.

7.4.2.1 Project:: Re-introduction of Fauna

Objective: To re-introduce small and medium mammal species that were historically indigenous to the Goba forest area and for which there is a suitable habitat available

Explanation:

- a) Several species, which previously occurred in the area, are now no longer there. However there is a suitable habitat for selected species which could be considered for re-introduction (see Appendix O).
- b) Re-introduction programs can not be planned and implemented if conditions for monitoring are not secured.
- c) If re-location programs are implemented the new populations should be strictly monitored.
- d) All proposed re-introductions should be approved before implementation.
- e) The government Management and Scientific authority should recommend the project to be approved by the Provincial Director of Forests and Wildlife.

7.4.3 Restoration and rehabilitation Programs

Policy and Objectives:

Policy: Areas previously degraded by human activities, such as fallow shifting cultivation areas on ravine and riverbanks, and no longer in use, should be restored as close as possible to their natural state.

Objectives:

- a) The stabilization and re-vegetation of disturbed areas using appropriate methods.
- b) Treatments designed to encourage or enhance regeneration should relate to specific aspect of species, phenology, seed dispersal and survival and seedling ecology in order to build up of seedling population dynamics.
- c) The control of unnatural erosion, and its source should be restricted.
- d) Depending on the case, basic management strategies could be used to solve overused recreational attractions.
- d) Monitor the site and ensure revegetation is being promoted.

7.4.4 Cultural and Historical Conservation Program

Policy and objectives

Policy: To preserve cultural historical structures, sites and artifacts found within the Goba area.

Objectives: To investigate, document, maintain, and conserve the cultural historical components of the area.

7.4.4.1 Project: Historical Cultural Sites

Objective: To maintain structures in the area that are part of the cultural history of the area.

Definition: Cultural historical components are all infrastructures and structures found in the area linked with the history of the local communities, colonial occupation and war: cave painting, sacred lagoon, War Memorial, Cemetery wall, Mazies' chiefdom Cemetery, and some of selected war ruins and old buildings.

Explanation: Historical infrastructures and structures are of cultural and educational value to present and future generations and should become important for the nature tourism of the area.

Implementation:

- a) Only some of the cultural and historical attractions were identified and visited.
- b) Experts in the field should be encouraged to investigate these sites to document them.
- c) The War Memorial and Cemetery wall need restoration;
- d) The roads linking these cultural attractions require rehabilitation and cleaning;
- e) Full description of Mbilambi Sacred lagoon and cave painting;
- f) Full description of the Goba's history (Mbilambi or Mazie family);
- g) War ruins and old building or historical should be identified and restored and full description is required;
- h) Local artifacts and other cultural symbols should be bought locally and be displayed in the local museum;
- i) The war ruins with no cultural value should be burst.

7.4.5 Public Utilization

Policy and Objectives:

Policy: To provide opportunities for the nature oriented outdoor recreation and environment education activities that do not conflict with the ecological function of the Goba Catchment area objectives.

Objectives:

- a) To provide recreational opportunities in a natural area.

- b) To establish environmental education opportunities for the interpretation of the natural resources to the visitors.
- d) To provide picnic sites linked to a system of trails for sighted and hikers
- e) The type and intensity of utilization should be determined by the visual Absorption Capability rating classes and policy.
- e) The policy and applicable activities and development for certain zones and attractions are given in description of the attraction (see Appendix L1)

7.4.5.1 Project: Picnic Facilities

Objective: To provide facilities to picnic for day visitors with the necessary ablution facilities.

Explanation: Visitors wanting to be in nature without entering the wilderness assets on foot, should be able to picnic near Goba village, *Androstachys* groves and near the War Memorial area.

Implementation:

- a) Picnic areas for day visitor should be near the central infrastructure wherever possible to prevent over utilization of the more sensitive areas.
- b) Adequate ablution facilities should be provided for the day visitors.
- c) Day visitors wanting to use the trail system should be in possession of the necessary permits to ensure that the carrying capacity of the trails is not exceeded.

7.4.5.2 Project: Sport fishing (catch-and-release)

Objective: To provide special opportunities for visitors to practice non-consumptive sport fishing (catch-and-release) allowing them to sample the local lagoon fish species for recreation and photographing.

Explanation: Visitors wanting to sample local fresh water fish most abundant in the local lagoons may be given an opportunity to catch and release a variety of fish from these lagoons.

Implementation: One or two days in a week could be allowed so that tourists (accompanied) enjoy this activity especially in Botene lagoon.

7.4.5.3 Project: Mountain Bike circle

Objective: To develop a Mountain bike trail circle that starts from the Goba Tourism village through the Madimbe Valley up to Botene Lagoon and from there to Lhanguene and Mbilambi wilderness assets, linking this area and Goba border post up to *Androstachys* Nature trail and then to the centre. This product is intended to provide an opportunity for Mountain bikers to use the area.

Explanation: The proposed mountain bike route will follow the Goba-Botene lagoon track (through the

Madimbe River valley) but with linkup tracks to make it more interesting. This will provide an extended route to link separate areas and to provide a longer route.

Implementation:

- a) A possible starting point at Control
- b) Mbilambi wilderness Tent camp should be considered as overnight option for mountain bike riders from Swaziland and South Africa.
- c) A route should be identified to go through the eastern side of Goba to the Botene lagoon and then up to Mbilambi area.

7.4.5.4 Project: nature and wilderness trails construction and maintenance

Objective: To construct and maintain new trails to an acceptable standard to prevent soil erosion.

Explanation: Nature and wilderness trails need to be maintained. Trails should not conflict with the principle of management and they may not impact a plant species population

Implementation:

- a) Identify the new trails on a Goba area (*Androstachys* groves area, Mbilambi wilderness assets, and Mbilambi- Botene through Lhanguene lagoon.
- b) Identify problem areas and specify remedial action to improve the area.
- c) Draw up a priority plan for repairing and upgrading of the existing routes.
- d) Schedule a regular review of all trails and a plan for ongoing maintenance.

7.4.5.5 Project: Bird and Butterfly watching

Objectives: To provide opportunities for visitors to view birds and butterflies along the Madimbi River course, Mbilambi wilderness, *Androstachys* woodlands, Spring Water and lagoons.

Explanation: The Goba avifauna must be documented and checklists must be provided for the visitors. Butterfly life has been well studied and documented and a list of species and vegetation types where they occur are identified (see Appendix N and O).

Implementation: A possible site should be investigated from where a good view is obtained and which is easily accessible from the tar and gravel road.

7.4.5.6 Project: Tent Camping

Objective: To establish a rustic tent campsite in the Mbilambi wilderness area.

Explanation: An established tent camp in the Mbilambi wilderness assets with access only by foot or by mountain bike would provide the ideal site for a wilderness adventure bush camp. Any limited party or

youth groups that require an isolated wilderness area for the presentation of training or simply relaxing would then use this site.

Implementation:

- a) The development of this tent camp is subject to the establishment of a permanent guard outpost at the nearest in the Camping area.
- b) The camp should be inaccessible by motor vehicle and access should be by foot and mountain bike.
- c) Strict control should be ensured to prevent over utilization of the area and the destruction of its aesthetic appeal.
- d) Draw up regulations on the usage of the area, fire control and implement a permit system.

7.4.5.7 Project: Environmental Education

Objective: To establish an environmental education program that would function on a two day time basis in the beginning. This would serve to promote environmental awareness and stimulate the need that exists for such activities in the whole Namaacha Region. The Goba area is part of Namaacha District region.

Explanation: The primary function of the Goba Area should be the conservation of water catchments and water quality. Its wilderness area together with the lagoons presents a holistic picture of the principles of catchment management. When the new nature tourism village is provided with infrastructure facilities, it would be possible to create an environmental education centre that would serve to inform the public about the goals and objectives of conservation of this new nature tourism destination as well as the importance of the public involvement.

Implementation:

- a) Construct suitable centre for education.
- b) Liaise with interest groups and advertise the program.
- c) Draw up conditions for the use of the facilities.
- d) Design and construct a central "lapa" where participants can gather.
- e) Consider sponsorship for adequate financing.

7.4.6 Monitoring and Research Program

Policy and Objectives

Policy: To provide the opportunity for research and non-destructive data collection within a naturally function ecosystem.

Objectives:

- a) To encourage research activities, particularly those that are of value to nature-based tourism

development and conservation.

- b) To establish monitoring techniques and programs to aid management of the Goba nature-based tourism destination and catchment area.

7.4.7 Services and Infrastructure Program

Policy and Objectives:

Policy: To establish and maintain an infrastructure required for the efficient management of the Goba nature tourism area.

Objective: The provision of minimal infrastructure required for the efficient management of the Goba area.

- a) Buildings should be rustic in design and should blend in with the environment.
- b) Material used for the construction should be carefully screened to ensure no contamination with alien species.
- c) In Mbilambi wilderness area, tent color should match with the surrounding appearance.

7.4.7.1 Project: Internal roads

Objective: To construct and maintain the internal road network system of roads or tracks roads not in use should be closed and new roads should be built.

Explanation: An excessive road network results in a loss of available area for natural habitat management. It also serves as a route for the introduction of alien plants and animals and can be a source of erosion and wildfires.

Implementation:

- a) Identify all the internal roads on a Goba base map.
- b) Problem areas should be identified and corrective action taken to reduce the problem.
- c) Where necessary a minimum of fills material should be used, and the material should be sourced from outside the main nature tourism area.
- d) All material should be carefully inspected to ensure that no contaminated material enters the area.
- e) Schedule the upgrading of roads on a priority basis.
- f) Old roads and gravel pits should be closed and revegetated

7.4.7.2 Project: Notice Boards and Trail Marking

Objective: The provision of adequate signs and information to facilitate the direct usage of the Goba Nature Tourism destination by the local community and the visiting public.

Explanation: Direct usage of the facilities in the area. Ensure that appropriate activities occur in

designated areas, which is in accordance with the policies of the Goba nature tourism.

Implementation:

- a) Design and erect information notice boards, which denote permissible activities and regulations at identified sites.
- b) Trail markers should be used to indicate all routes.
- c) All notice boards and trail markers should be clear in their meaning and, where possible, they should blend into the environment.

7.4.7.3 Project: Nature Trails Construction and Maintenance

Objective: To construct and maintain new trails to an acceptable standard to prevent soil erosion.

Explanation: Nature and wilderness trails need to be maintained. Trails should not conflict with the principle of management and they may not compromise plant species populations.

Implementation:

- a) Identify the new trails in Goba area (*Androstachys* groves area, Mbilambi wilderness assets, and Mbilambi- Botene through Lhanguene lagoons.
- b) Identify problem areas and specify remedial action to improve the specific problems.
- d) Draw up a priority plan for repairing and upgrading of the existing routes.
- e) Schedule a regular review of all trails and a plan for ongoing maintenance.

7.4.7.4 Project: Building and Structures

Objectives: To construct any approved new buildings according to the set of standards.

Staff and management buildings should be maintained in the local village.

Explanation: Management should carry out interim minor repairs and maintenance and

This may include buildings, waterworks, electrical systems and other structures.

Implementation:

- a) Construction of any new buildings should meet the required standards.
- b) Ensure that all buildings in the development area are placed on the works maintenance list.
- c) Carry out interim minor repairs and maintenance on an ongoing basis

7.5 Concluding Comments

Planning, as a process of preparing a set of decisions for action in the future, directed at achieving goals by optimal means, is an iterative process and is never complete. Results encountered in the present determine what may or may not be possible or desired in the future, and these factors constantly change

with time. As reliable data and information become available, defined goals will be continually monitored and adjustments will be made. Management is not an exact science (Jubenville *et al.*, 1987). All decisions must be tempered with professional judgements not personal value judgements. Even then the “right” answer must be continually refined and nurtured. To discover technical solutions, however, we need a high level of concurrence about social values and scientific facts, a condition rarely met.

The process described here is highly dependent upon community involvement, commitment of local and regional governments, developers, scientists and other prime factors. It is limited by the extent of research knowledge concerning the linkage between resources assets, potential use and development. So we must continually work hard to achieve any measure of success. And success is judged on how well planned the ecosystem and equilibrium, on the continuum of recreational opportunity that is to be offered. This management approach leads to and provides the basis for site design and feasibility of individual projects for nature-based tourism in Goba as well as for service management, monitoring and evaluation.

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APPENDICES

APPENDIX A Tally sheet 2 Market Survey Questionnaire

SUN NC COURSE FIELDWORK 2000
MARKET SURVEY QUESTIONNAIRE

WEATHER CONDITIONS

Hot

Sunny

Humid

Warm

cloudy

Dry

Cold

rainy

Windy

INTERVIEW LOCATION

Ponta d'Ouro

Praia de Bilene

Praia de Vilanculos

Cost do Sol Beach

Maputo Airport

Praia de Inhassoro

Date:

#Questionnaire:

Hello, my name is: I am doing a survey on behalf of the FAO/Moz, on the value of natural resources in the region. You have been randomly selected to be interviewed. Do you mind spending few minutes of your time answering some questions? Thanks.

If yes, proceed; if no please tally 1/2/3/4/5/6/7/8/9/10 or more

1. Have you or any members of your family been interviewed before with our group? Yes: (Stop interview, mark tally)
1/2/3/4/5/6/7/8 or more No:

2. Is this your first visit to ? If not how often do you came here?

3. How long have you been here so far?

4. Where do you come from? (country) (town)

5. Is that where you traveled? Yes/No If not, where?

6. How many people are in your party? Foreign Mozambican visitors

7. How long are you staying here?(a) How long is the whole trip away from Home? (b)
Total Estimated budget

8. What do you do when visiting Mozambique? If you were to decide on visiting the following attractions, what % of you time would you attribute to each?

	%Time	% Satisfaction
Beach and diving/fishing		
Undisturbed natural forest with sacred pools, Water falls and bird watching and pristine spring water and nature trail		
Cultural tourism		
Wildlife viewing/ photography/ hunting		

Comments:

9. Please indicate your age group (Hand out card)

- Less than 18 years (Stop)
- 18 – 24 years 1
- 25 – 34 years 2
- 35 – 44 years 3
- 45 – 54 years 4
- 55 – 64 years 5
- 65 – 70 years 6
- 71 – 75 years 7
- 76 – 80 years 8
- 80 + (Stop)

10. We would like to have an idea of the family annual income. Please tell us in which of the following income categories your family income fall? (Hand out the table)

11. Please indicate your age group (Hand out card)

- Less than 18 years (Stop)

Thank you for your participation. Your co-operation will provide the agencies involved with better information on the economic and ecological value that the people of Mozambique have for these assets.

APPENDIX B Data requirement for recreation assessment

Data	Use
Contours, DHM	Assessing view point, accessibility, elevation, slope and aspect.
Topographic maps	Landscape value
Road maps	Accessibility
Field visit	Soil type, ground vegetation, landscape value, forest type and age class, hazards
Forest maps, aerial photos	Forest types, age class
	Drainage system, scenery
	Rivers

APPENDICES C1 and C2

APPENDIX C1 Criteria for assessing recreation potential

1. Vegetation types including trees, shrubs and grasses.
2. Soil condition.
3. Topography (slope, aspect.)
4. Accessibility - presence and type of roads, trails.
5. Distance from the settlement and road.
6. Visibility over the surrounding areas
7. Existing land use.
8. Potential picnic/tent sites.
9. Risks & hazards.
10. Approach roads.
11. Landscape.
12. Density of the forest.
13. Rivers/streams.
14. Land ownership.
15. Wildlife.

APPENDIX C2 Criteria for highly suitable areas for recreational uses

1. Fairly open mixed forest.
2. Close to an access road but having a minimum of traffic noise (500 m - 2.0 km).
3. Good views over the surrounding areas.
4. Well drained soils.
5. Good provision for picnicking tent sites and parking.
6. Good landscape.
7. Slope % < 30 %.

APPENDICES D AND E

APPENDIX D Basic principles governing VAC analysis (Yeomans, 1979):

- ◆ All lands vary in their ability to absorb modifications.
- ◆ Areas near landscape focal points have lower capabilities to absorb modifications.
- ◆ The higher the complexity/ diversity of landscape the higher its visual absorption capability
- ◆ Landscape edges, i. e., breaks between forest and grassland, lakeshore etc., have higher VAC due to their diversity of background, but low VAC due to their propensity to become focal points.
- ◆ Ridge tops are most likely to have low VAC due to consequent scrutiny as focal points.
- ◆ Lands with the highest soil color contrast have the lowest VAC since development may expose soils by side casting, stockpiling, etc.
- ◆ Lands with geologic stability and good growing conditions may have moderate to low VAC if vegetation is lacking or monotonous and uniform, but high VAC in the long run due to good regeneration rates and stable soil conditions.
- ◆ Uniformly tall, dense forest stands of trees have high VAC due to screening ability, i.e., high when in foreground but lower VAC when in Background.

APPENDIX E1 VAC biophysical rating classes (Yeomans, 1979; Anderson *et al.*, 1979)

Class I (VAC biophysical rating of 51-60)

Areas which are gentle to moderate in elevation, with diverse vegetation and stable management activities with a minimum negative effect on the visual and environmental quality of the landscape:

Class II (VAC biophysical rating of 41-50)

Areas of rolling to ridgeline topography with open to semi-open mixed and diverse evergreen / deciduous vegetation capable of supporting management activities with a minimum amount of landscape alteration and having stable soils and landform characteristics.

Class III (VAC biophysical rating of 28-40)

Areas moderately interesting with typical landscape character and diversity with varied topography restricted to slopes less than 15 percent supporting diverse vegetation. However, the topography and vegetation cover is reasonably difficult to manipulate in the interest of the visual and environmental resource.

Class IV (VAC biophysical rating of 16-27)

Areas of pronounced topographic eminence but lacking in diversity with slope ranging to 30 percent and vegetation characterized by open deciduous, evergreen or shrub complexes. Management activities would be seen regardless of any mitigation measures adopted during or following development.

Class V (VAC biophysical rating of 4-15)

Areas of extreme topographic variation with uniform vegetation cover, or devoid of such, offering little opportunity for matching management activities with the characteristic landscape; or readily observed from access routes and perhaps elsewhere; slope in excess of 35 percent, actively failing slopes and / or very sensitive vegetation.

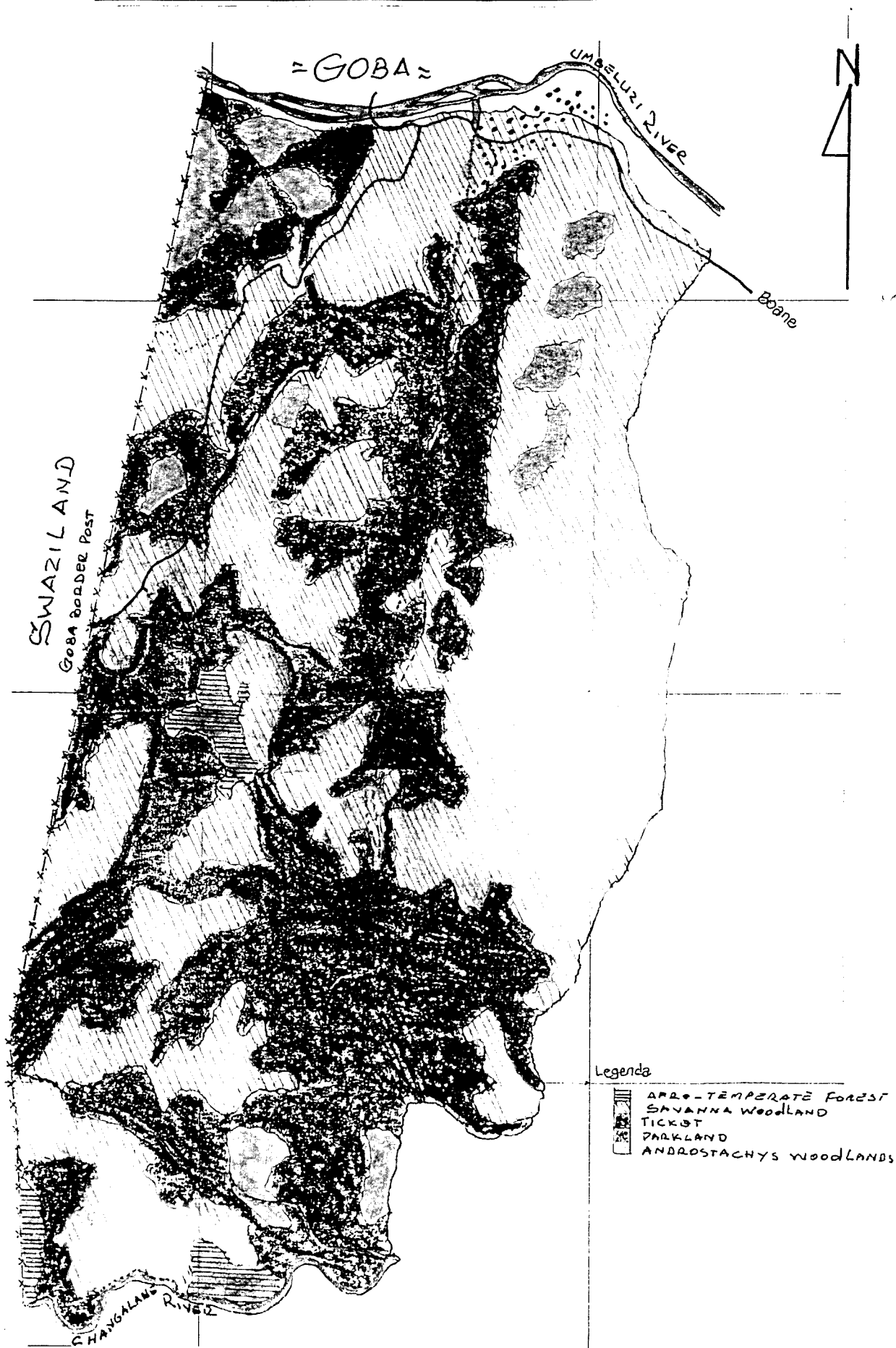
APPENDICES E2 AND F

APPENDIX E2 Ecological zoning (from Cumming 1996)

1. **High Sensitivity (S1):** These areas are characterized by a low tolerance to disturbance, and include habitats associated with rare and endangered species, and steep moisture gradients. Not utilization should take place in this zone, except where S2 and S3 features extend into it (e.g. existing 4X 4 vehicles and stabilized footpaths).
2. **Medium Sensitivity (S2):** These are areas of slightly higher tolerance and include forest patches, riverbanks, shale bands and some moist southern slopes. Limited low impact utilization may take place in this zone.
3. **Low Sensitivity (S3):** These areas have a higher tolerance, as well as greater recovery potential, to disturbance. It includes existing roads and footpaths and all over areas not currently categorized as higher sensitivity if further qualifying evidence comes to light.
-

APPENDIX F Criteria for Selection of sites for development in attractions (Developed during the course of study)

Scenery,	Land ownership	Suitability
Accessibility	Landscape	Community attitude
Land use	Sensitivity	Birds
All rating from 1-5 points. <i>Scenery</i> (1=not attractive, 5= attractive); <i>Land use</i> (1= crop/grazing/mining, 5=conservation, protection) <i>Landscape</i> (1=corredor-5= panoramic).		
<i>Community Attitude</i> (1=opposed, 5= Supportive); <i>Accessibility</i> (1=not, 1=track, 5=motorable road); <i>Sensitivity</i> (1=steep, 5=flat),		
<i>Sensitivity</i> (1=steep, 5=flat), <i>Ownership</i> (1=private, 5= Estate Birds(1=few, 5=many)		



APPENDIX I Summary of vegetation cover types and biophysical surveyed data of the sites

PLANT SPECIES	SITES							
	1	2	3	4	5	6	7	8
<i>Combretum apiculatum</i>	-	2	3	2	-	2	1	2
<i>Combretum molle</i>	1	1	1	1	-	2	1	4
<i>Terminalia sericea</i>	-	-	-	-	-	1	-	1
<i>Sclerocarya birrea</i>	3	3	-	4	-	2	1	-
<i>Bauhinia</i> spp	-	-	1	-	2	2	1	-
<i>Podocarpus falcatus</i>	-	-	-	-	-	1	-	-
<i>Pittosporum viridiflorum</i>	-	-	-	-	-	2	-	-
<i>Kiggelaria africana</i>	-	-	1	-	-	3	-	-
<i>Panicum maximum</i>	1	-	1-1	-	1-1	1-1	1-1	-
<i>Sporobolus festivus</i>	-	-	-	-	-	-	-	1-1
<i>Andropogon contortus</i>	-	-	-	1	-	1-1	-	-
<i>Mimosops</i> spp	-	-	2	-	-	3	1	3
<i>Acacia caffra</i>	-	-	1	5	2	-	2	-
<i>Veronica oligacephala</i>	1	-	-	1-1	1	1	-	-
<i>Urochloa</i>	-	-	-	1	1	-	-	-
<i>mosambicensis</i>	-	-	-	-	-	-	-	-
<i>Hyparrhenia dissoluta</i>	-	-	1	1-1	-	-	1	-
<i>Antidesma</i> spp	1	-	-	-	1	-	1	2
<i>Cassia petersiana</i>	2	2	-	1	-	1	-	-
<i>Grewia</i> spp	-	-	-	-	1	3	-	1
<i>Dichrostachys cinerea</i>	1	1	1	6	1	1	-	-
<i>Grewia caffra</i>	-	-	1	-	-	1	-	-
<i>Berchemia zeyheri</i>	-	1	-	1	1	-	1	-
<i>Grewia flavescens</i>	1	1	-	-	-	1	1	-
<i>Ziziphus mucronata</i>	-	-	1	-	2	-	2	2
<i>Diospyros mespiliformis</i>	-	-	-	-	1	-	1	-
<i>Euphorbia triangularis</i>	-	-	-	-	1	-	-	-
<i>Schotia brachypetala</i>	-	-	-	-	-	-	-	-
<i>Syzygium cordatum</i>	-	-	-	3	2	3	2	-
<i>Albizia adianthifolia</i>	-	-	2	-	1	-	-	2
<i>Combretum zeyheri</i>	1	1	2	-	-	2	1	-
<i>Strychnos</i>	3	2	-	3	-	2	-	-
<i>madagascariensis</i>	-	-	-	-	-	-	-	-
<i>Euclea natalensis</i>	-	-	2	3	1	1	1	-
<i>Garcinia livingstone</i>	-	-	1	-	-	-	-	-
<i>Dalium schlechteri</i>	-	1	-	-	-	-	1	-
<i>Aannonia senegalensis</i>	2	3	1	-	-	-	1	2
<i>Trichillia emetica</i>	1	-	2	1	-	-	3	-
<i>Galpinia transvaalica</i>	-	-	-	-	1	1	-	-
<i>Eragrostis racemosa</i>	-	1-1	-	-	-	-	1	-
<i>Grewia flavescens</i>	1	-	1	-	-	-	-	-
<i>Ziziphus mucronata</i>	-	-	-	-	1	1	-	1
<i>Euclea schimperi</i>	1	-	1	1	1	1	-	-

<i>Grewia sulcata</i>	2	-	-	-	-	-	-	-
<i>Vangueria infaustia</i>	3	3	-	4	-	-	1	2
<i>Croton</i>	-	-	-	3	-	1	-	1
<i>pseudopulchellus</i>								
<i>Pleurostyliia capensis</i>	-	-	-	-	1	2	-	2
<i>Strichnos spinosa</i>	-	1	1	1	1	1	1	-
<i>Bauhinia galpinii</i>	1	-	-	-	1	2	-	-
<i>Eragrostis luvule</i>	-	1-1	-	-	-	1	-	-
<i>Andropogon eucomus</i>	-	-	-	-	1	-	-	1
<i>Andropogon gayanus</i>	-	-	-	1-1	1-1	1	1-1	-
<i>Sorghum bicolor</i>	1-1	1-1	-	-	-	1	1-1	-
<i>Setaria megaphylla</i>	1-1	1-1	-	-	-	1	1	-
<i>Themeda triandra</i>	1	-	-	1-1	1	1	-	1-1
<i>Cymbopogon cavatus</i>	-	-	-	-	-	-	1	1
<i>Hyparrhenia hirta</i>	-	-	-	1	1	-	-	-
<i>Melinis repens</i>	1	1-1	-	-	-	-	-	-
<i>Cymopogon plurinodis</i>	-	-	-	1	-	-	-	-
<i>Azelia quanzensis</i>	2	1	1	-	2	-	1	4
<i>Aloe marlothii</i>	-	3	-	-	-	-	-	-
<i>Digitaria ternata</i>		1-1	-	-	-	-	-	-
<i>Pterocarpus</i>	-	1	2	-	-	-	1	2
<i>rotundifolius</i>								
<i>Tabernaemontana</i>	-	-	2	-	1	-	4	-
<i>elegans</i>								
<i>Atalaya alata</i>	-	-	-	-	-	2	1	1
<i>Albizia versicolor</i>	-	1	3	-	1	-	1	2
<i>Spirostachys africana</i>	-	-	-	3	-	-	1	-
<i>Androstachys johnsonii</i>	-	-	-	1	-	-	-	-
<i>Andropogon chinensis</i>	1	-	-	1	-	-	-	1
<i>Andropogon validus</i>	-	-	-	-	-	-	-	-
<i>Setaria incompressa</i>	--	--	--	--	--	--	--	1
<i>Imperata cylindrica</i>	-	-	-	1	1	-	-	1
TOTAL	33	36	38	57	39	56	47	49
MEAN/PLOT	17	18	19	27	20	28	24	25
SLOPE (%)	0-3	2-5	25-35	10-20	<35	10-15	20-25	2-10
TREE COVER (%)	10-20	15-30	55-60	25-45	40-50	20-60	50-60	20-30
GRASS COVE (%)	70-80	55-75	10-15	40-60	20-30	30-70	15	60-75
SHRUB COVER (%)	10	10-15	30	15	30	10	25-35	5-10

- For the slope, and cover types the two figures indicate that information is summarized from two plots and where only one figure appears means that the two plots had similar recorded value.

- For grass vegetation species recorded figures sometimes appear (1-1). This means in both plots this grass species was recorded, and if only singular number appears then it was only found in one of two plots of site.

- More species were recorded in one of the two plots of each site.

APPENDIX J VAC data for Attraction sites analysis (Biophysical)

Biop. factors	Pico U	Control	Cruz.	Androsta.	Ravine	Wilde	Sp.W.	Bote	S.Pool
Slope(1-5)	5	5	3	4	3	3	3	3	3
SEP(1-3)	3	3	1	2	2	1	1	2	2
VRP(1-3)	3	3	3	3	2	1	1	2	2
SRCC(1-3)	2	3	2	2	2	1	1	1	2
LuLd(1-3)	2	2	3	3	3	2	1	2	2
VAC	50	55	12	40	27	15	12	21	24

1. SEP= Soil Erosion Potential; VER= Vegetation Regeneration Potential; SRCc= Soil and Rock Color Contrast; LuLd= Land Use/ Landscape Diversity;

2. Pico U=Pico of Umbeluzi; Control =Control; Cruz= Cruzamento Plano; Androsta= *Androstachys* Groves; Ravine; Ravine; Wilde= Mbilambi Wilderness; Sp.W.= Spring Water; Bote= Botene Lagoon; S. Pool = Sacred Pool

APPENDIX K Recreation site descriptions

The following are the descriptions of the most important attraction sites (see Appendix L)

Site 1: Pico de Umbeluzi

This site is situated on the mountain plateau at 310.2 m above sea level and 1.5km in the East Side of the Goba village. Although the site has a disadvantage of being a communal grazing area and located very near Goba village (<1500 m), the landscape visibility and diversity, soil stability, site recoverability and topography are very good and suitable for recreation activities. The land is also state owned. With proper institutional arrangements for recreation activities, this area may require very little treatment to make it very good for recreation as this site has been used as a picnic area in the past. The area has high Visual Absorption Capability (VAC of 50) corresponding to a low sensitivity (S3). Currently the area is used as a communal grazing area. The area requires the provision of general recreational facilities (flush toilets, picnic sites and fireplace, bins and litter collection areas).

The proposed improvements are:

- a. Providing provisional recreational facilities to the area
- b. Rebuilding the old access track;
- c. Fencing the steep mountain slopes near the recreation area to make it safe;
- d. Moving cattle from the area and turn the area into recreation use

The site has the following recreation potentials:

- a. Picnicking - open grassland and on rocky outcrop;
- b. Sightseeing at natural wonders;
- c. Nature walks/trails
- d. Indigenous orchard;

Site 2: Control

This site is not an attraction as such; but a selected area for nature tourism village and center development. It lies at 120 m above sea level, and the slope is gentle to flat, approximately 2 km from the Goba Village. The site has an arresting panoramic landscape, flat, good soils and vegetation type for development. Though this area has a disadvantage of being composed of fine wooded grassland where cropping activities for subsistence are going on and being situated near a power line, the site was found suitable for tourism development. This site has been used as a landing strip for light aircraft in the past and has a high Visual Absorption Capability of 55. that gives it the capability to support development management activities with a minimum negative effect on the visual and ecological quality of the landscape. This site has been selected in accordance with the local village council as future tourism village. Cropping, wild fires, and housing for the locals will need to be far from this site if it is to be developed. The vegetation cover is typical parkland composed mostly of *Sclerocarya birrea*, *Vangueria infausta*, *Aloe marlothi*, *Azelia quanzensis* and *Combretum apiculatum*. The combination of tree species gives it a beauty as a residential asset. The site is well served with an old track, that only needs rehabilitation. The area requires the provision of general recreational facilities such as flush toilets, fireplaces, kitchen, barbecue areas, and bins and litter collection areas.

The following recreation potentials were identified:

- a. Photography (landscape)

- b. Bird watching
- c. Indigenous orchards
- d. Sightseeing
- e. Nature walks

The proposed developments (infrastructure):

- a. Nature tourism Office
- b. Parking facilities
- c. Interpretation center,
- d. Local museum/information center
- e. Small shop
- f. Chalets
- g. Provision of general residential facilities;
- i. Rebuilding the old access track;

Site 3: Cruzamento of Quota

Situated a few meters from Impala Pillars (275.6 m), this is a viewpoint at the main flanked curve by beautiful and well-stocked ravine thickets. This area has a very low Visual Absorption Capability (VAC) value of 12. But in near future with improved management of the area, if well planned and designed, short trails could be constructed on both roadsides to allow visitations to ravine thickets. The site is composed of various vegetation types: grassland, wooded grasslands and a dense ravine thicket. Its visual landscape and diversified vegetation types give it suitability for:

- a. Sightseeing,
- b. Bird watching,
- c. Butterfly, and lizard watching (rock outcrops)

This site is suitable for an educational nature trail. The disadvantages are fallow crop fields on the right side valley, as well as the pronounced ravine slopes.

Site 4: *Androstachys* Grove

This site has one of the most attractive features, which is a semi-wilderness hillside *Androstachys* grove. It is composed of a mature *Androstachys* forest of mixed type. It is unique in that these tree species, now threatened by use as building poles and laths, have their own avifaunal habitat, although it is poorly documented. Grassy hilltops at this site are suitable for campsites, picnicking and overlooking the natural forests of Lubombo Ranges of Swaziland. The landscape is panoramic; the soils, although stony, are also good for vegetation recoverability, giving the site a moderately high VAC of 40 with low sensitivity (S3). *Androstachys* groves can be considered as semi-wilderness and the transitional thicket with big *Sclerocarya birrea* trees, *Acacia* sp. and *Combretum apiculatum* trees as a wilderness buffer if a nature trail were to be developed. General recreation should not take place on the steep slopes, but hiking trails may extend into zone from the proposed camping zone if possible. It is proposed, as a nature trail for environmental education use, as the *Androstachys johnsonii* stands needs to be conserved and preserved. The site is 3 km from the nearest settlement and 1.3 km from the accessible motorable road. The site can be developed for nature tourism as diverse vegetation and stable soil conditions surround it. The following recreation potentials were identified:

- a. Camping
- b. Hiking

- c. Picnicking
- d. Bird and butterfly watching
- e. Nature studies

The proposed nature trail needs to be well planned, designed and built with local materials. The area requires the provision of general recreational facilities (flush toilets, fireplaces, kitchen, barbecue areas, and bins and litter collection areas).

Site 5: Ravine 1

Though this area has the disadvantage in that it is too steep for walking, it was found suitable as a viewpoint because of the scenery, panoramic landscape, visibility and good soil drainage and state ownership. The site has a VAC of 12 with sensitivity (S1) due the steeper ravine slope. With proper arrangement for recreation, this area requires very little forest management to make it very good viewing point with picnicking facilities. Other potential uses are bird watching and photography.

Site 6: Mbilambi Wilderness

Situated on an escarpment along a riverbank in the southern part of Goba, this site is a visitor's paradise. Well preserved broad-leaved forest with fern/herbaceous ground flora and huge lianas, buttressed trees and epiphytes are features, which makes it a wilderness asset suitable for bio-ecological conservation studies. The soils are generally good, rhyolitic and stony, but well drained due to the high organic matter content. Despite it's beautiful landscape, well-drained soils, and the slope unfortunately excessive (35 %) with high erosion potential and low recoverability due to shade and it has a low VAC of 15 (S1). The lower part of the area is prone to flooding and the lake may be susceptible to environmental degradation with tourism development. Therefore this sensitivity level does not make it suitable for any development. Nevertheless, as a wilderness asset, a limited visitor number and non-motorable is proposed as a method for managing possible negative ecological and environmental impacts. The following recreation potentials were identified:

- a. Wilderness trail
- b. Bird watching
- c. Nature studies including wildlife viewing.
- e. Picnicking, (only in south side - transition wooded grassland)
- f. Cultural experience (majestic lagoon)
- g. Photography;
- h. Butterfly watching;

The proposed wilderness trail must be well designed and built in accordance with contour lines to avoid erosion and other kinds of environmental and ecological degradation. A short walk along the proposed trail will be very informative not only about the forest but about nature itself, and will be especially useful as a guided walk for nature studies of school children.

Site 7: spring water

Situated on a ravine hillside with a well-protected thicket woodland and beautiful landscape, this site is a privately owned land and a mineral water factory. Arrangements need to be made to turn it into an attraction for Goba tourism. The site, though beautiful and attractive, has a very low Visual Absorption Capability (VAC =12) and is highly sensitive (vegetation, slope, water contamination and ownership), because it is privately owned for quality water production. It is near local settlements along Madhimbe River and is attractive for bird watching, cultural visitation, and environmental education.

Site 8: Mbilambi Sacred Lagoon

This Majestic sacred lagoon lying on bottom rocky valley of Mbilambi area is bordered limited on the north by the Mbilambi Wilderness, and on the northwest side by a riverine thicket with mixed species and wooded grassland in the Southwest. Portuguese settlers have recreationally used the area in the past but it was never developed. This is the relic, pristine and unique area of Goba and reserved for conservation and tourism development. The lake belongs to Mbilambi Chieftdom and is used for cultural and spiritual purposes. These facts make it not suitable for swimming and fishing, but it can be used as an attraction for cultural education tourism with minimal arrangements. The sacred lake itself, apart from water and cultural aspects, has low (VAC = 24) and S1. Nevertheless, no development has been proposed because it is a part of Mbilambi wilderness complex, which has already been proposed wilderness trail and a proposed small campsite.

Site 9: Botene Lake

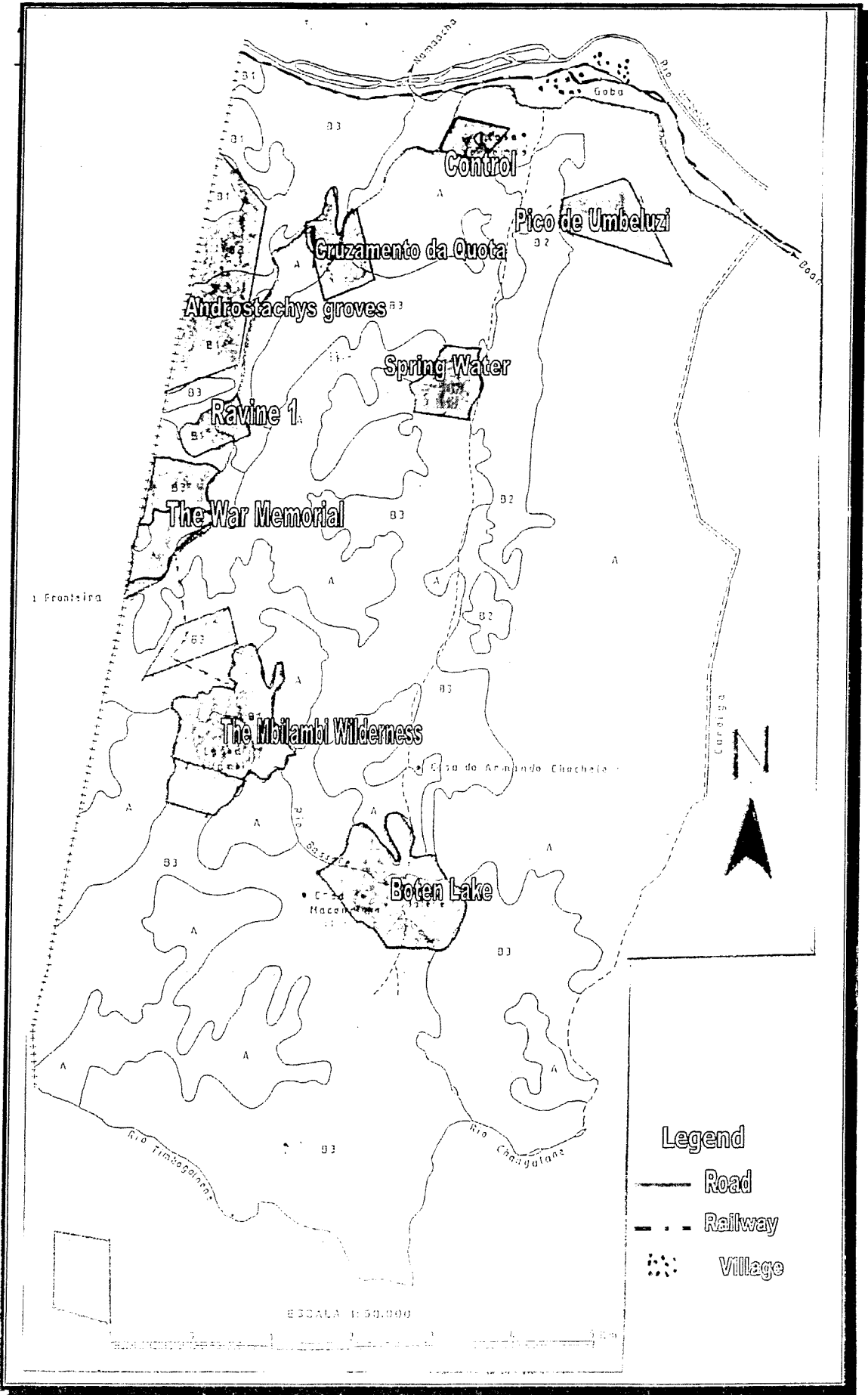
This is a graceful scenic area, with interesting rock outcrop formations, and good views of the mountain. Botene Lake is at the far south end of the study area. The calm lake among the mountains offers a peaceful and emotional sentiment to the visitor and it is very good for cultural education of the area, as swimming is not allowed. This area contains a variety of spatial viewpoints. Although it is currently being used for fishing, the area is highly sensitive to any development because of its low Visual Absorption Capability of 21 (S1). The site can only serve for general recreation and limited sport fishing activities. The surrounding thicket is attractively beautiful and has in its southern part a historical and still active chieftdom cemetery. The area has been planned for conservation, and small game can sporadically be seen. Identified activities are:

- a. Sport fishing (catch-and-release fishing trips)
- a. Bird watching
- b. Picnicking
- c. Nature walking
- d. Game viewing
- e. Photographing

This tourism attraction is recommended for adventurers and young people. Because of its high sensitivity level, minimal recreational facilities are required (simple pit latrine, fireplace, bins and litter collection area).

Site 10: War Memorial/Cemetery Wall

This historic cultural attraction is situated just a few meters from the border with Swaziland. It needs restoration (painting and road clearing) to be ready for visitation and it is connected to a cemetery wall. No development is required for these attractions. The entrance roads either to the war memorial or to the cemetery require restoration.



APPENDIX M Visual Management Objectives (prescriptions) (Bacon, 1979; Jubenville, 1987)

PRESERVATION (P)

This visual quality objective allows ecological changes only. Management activities, except for very low visual impact recreation facilities are prohibited. This objective applies to wilderness areas, primitive areas, other special classified areas and some unique management units do not justify especial classification.

RETENTION (R)

Visual quality objective provides for management activities, which are not visually evident.

Under retention, activities should not produce evident changes in the quality of landscape.

Duration of Visual Impact Immediate reduction in form, line, color, and texture contrast in order to meet retention or immediate after. It may be done by such means as seedling vegetative clearance, cut-or-fill slopes and hand planting.

PARTIAL RETENTION (PR)

Management activities remain visually subordinate to the characteristic landscape when managed according to the partial retention visual quality objective changes in their qualities should remain visually subordinate to the characteristic landscape.

Duration of Visual Impacts: All reductions (form, line, color, or texture) to meet partial retention should be accomplished as soon after project completion.

MODIFICATION (M)

Under the modification visual quality management activities should visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from naturally established form, color, and line or texture completely and at such scale that its visual characteristics are those of natural occurrences within the surrounding area of character type. Activities as structures, roads, slash ... must remain visually subordinate to the proposed composition.

Activities are predominately introduction of facilities such as buildings, signs, roads, etc. should borrow naturally established form, color, line and texture so completely and at such scale that its visual characteristics are compatible with the natural surroundings.

Duration of Visual Impact: The reduction of all landscape elements should be accomplished in the first year or at a minimum should meet existing regional guidelines.

MAXIMUM MODIFICATION (MM)

Management activities of vegetative and landform alteration may dominate the characteristic landscape. However when viewed as background, the visual characteristics must be those of natural occurrence within the surrounding area or character type. Alterations may also be out of scale or certain detail, which is incongruent with natural occurrence as seen in foreground, or middle ground.

Introduction of additional parts of these activities such as structures, roads, slash must remain visually subordinate to the proposed composition as viewed in background.

Duration of Visual Impact: The reduction of the contrast should be accomplished within five years.

APPENDIX N Birds observed at Goba on 11 July 2000 by Dr. WRJ Dean, PercyFitzPatrick
Institute University of Cape Town

Roberts No.	Family	Species	English name	Portuguese name
58	Phalacrocoracidae	<i>Phalacrocorax africanus</i>	Reed Cormorant	
71	Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret	Garça-boeira
81	Scopidae	<i>Scopus umbretta</i>		
105	Anatidae	<i>Anas sparsa</i>	Africana Black Duck	
122	Falconidae	<i>Gyps coprotheres</i>	Cape Vulture	
126	Accipitridae	<i>Milvus migrans migrans</i>	Yellowbilled Kite	
127	Accipitridae	<i>Elanus Caeruleus</i>	Blackshouldered Kite	
128	Accipitridae	<i>Milvus migrans parasitus</i>	Black Kite	
143	Accipitridae	<i>Circaetus pectoralis</i>	Blackbreasted Snake Eagle	
144	Accipitridae	<i>Circaetus fasciolatus</i>	Southern banded Snake Eagle	
146	Accipitridae	<i>Terathopius ecaudatus</i>	Beteleur	
154	Accipitridae	<i>Kaupifalco monogrammicus</i>	Lizard Buzzard	
163	Accipitridae	<i>Melierax metabates</i>	Dark Chanting Goshawk	
196	Phasianidae	<i>Francolinus natalensis</i>	Natal Francolin	
198	Phasianidae	<i>Francolinus afer</i>	Rednecked Francolin	
203	Numididae	<i>Numida meleagris</i>	Helmeted guineafowl	
204	Numididae	<i>Guttera pucherani</i>	Crested guineafowl	
352	Columbidae	<i>Streptopelia semitorquata</i>	Red-eyed Dove	Rola-preta
354	Columbidae	<i>Streptopelia capicola</i>	Cape Turtle Dove	Rola-de-colar
355	Columbidae	<i>Streptopelia senegalensis</i>	Laughing Dove	Rola-de-Senegal
371	Musophagidae	<i>Tauraco porphyreolopus</i>	Purplecrested Lourie	
391	Cuculidae	<i>Centropus burchellii</i>	Burchell's coucal (White browed coucal)	
385	Cuculidae	<i>Chrysococcyx klaas</i>	Klaas' Cuckoo	Cuco-bronzeado-menor
409	Caprimulgidae	<i>Caprimulgus fossii</i>	Mozambique Nightjar	
421	Apodidae	<i>Cypsiurus parvus</i>	African Palm Swift	Guincho-das-palmeiras
424	Coliidae	<i>Colius striatus</i>	Specked Mousebird	
426	Coliidae	<i>Urocolius indicus</i>	Redfaced mousebird	
428	Accedidae	<i>Ceryle rudis</i>	Pied Kingfisher	
429	Coliidae	<i>Megaceryle maxima</i>	Geant Kingfisher	
431	Accedidae	<i>Alcedo cristata</i>	Malachite Kingfisher	
432	Accedidae	<i>Ispidina picta</i>	Pygmy Kingfisher	
433	Accedidae	<i>Halcyon senegalensis</i>	Woodland Kingfisher	
435	Accedidae	<i>Halcyon albiventris</i>	Brownhooded kingfisher	
447	Coraciidae	<i>Coracias caudata</i>	Lilacbreasted Roller	
451	Phoeniculidae	<i>Upupa africana</i>	Hoephoe	
455	Bucerotidae	<i>Bycanistes bucinator</i>	Trumpeter Hornbill	
457	Bucerotidae	<i>Tockus nasutus</i>	Grey Hornbill	
460	Bucerotidae	<i>Tockus alboterminatus</i>	Crowned Hornbill	Bico-de-serra-castanho
464	Capitonidae	<i>Lybius torquatus</i>	Black-collared Barbet	Barbaças-de-colar-preto
486	Picidae	<i>Dendropicus fuscescens</i>	Cardinal Woodpecker	
471	Capitonidae	<i>Pogoniulus bilineatus</i>	Golden-rumped Tinkerbird	Barbadinho-de-rabadilha-limão
522	Hirundinidae	<i>Hirundo smithii</i>	Wire-tailed Swallow	Andorinha-cauda-de-aramé
538	Cuculidae	<i>Campephaga flava</i>	Black cuckooshrike	
541	Dicruridae	<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	Pássaro-das-queimadas

568	Pycnonotidae	<i>Pycnonotus barbatus</i>	Black-eyed Bulbul	Chiricuata
572	Pycnonotidae	<i>Andropadus importunus</i>	Sombre Bulbul	Sombre Bulbul
648	Sylviidae	<i>Apalis flavida</i>	Yellow-breasted Apalis	Apalis-de-peito-amarelo
679	Sylviidae	<i>Cisticola aberrans</i>	Lazy Cisticola	
683	Sylviidae	<i>Prinia subflava</i>	Tawny-flanked Prinia	Prinia-de-flancos-ferrugineos
690	Muscicapidae	<i>Muscicapa adusta</i>	African Dusky Flycatcher	Papa-moscas-sombrio
694	Muscicapidae	<i>Melaenornis pammelaina</i>	Southern Black Flycatcher	Papa-moscas-preto
701	Platysteiridae	<i>Batis molitor</i>	Chinspot Batis	Batis-comum
732	Laniidae	<i>Lanius collaris</i>	Fiscal Shrike	Picanço-carniceiro
744	Malaconotidae	<i>Tchagra senegala</i>	Black-crowned Tchagra	Picanço-assobiador
780	Nectariniidae	<i>Cinnyris bifasciata</i>	Purple-banded Sunbird	Beija-flor-de-peito-roxo
796	Zosteropidae	<i>Zosterops pallidus</i>	Cape White-eye	
808	Ploceidae	<i>Ploceus bicolor</i>	Dark-backed Weaver	Tecelão-da-floresta
842	Estrildidae	<i>Lagonosticta senegala</i>	Red-billed Firefinch	Peito-de-fogo-pequeno
844	Estrildidae	<i>Uraeginthus angolensis</i>	Blue Waxbill	Peito-celeste
869	Fringillidae	<i>Serinus mozambicus</i>	Yellow-fronted Canary	Bigodinho
946	Cuculidae	<i>Centropus superciliosus</i>	White-browed Coucal	Cuco-de-Luanda

APPENDIX O Butterfly assemblages of forest, grassland and disturbed ecotones of Goba, Mozambique.

Grassland		Forest edge			Forest	
Apiario G	Movene G	Mandimbe E	Mbilambi E	Movene E	Mandimbe F	Mbilambi F
-	-	-	3	-	-	-
-	-	1	1	-	-	-
-	-	1	-	-	1	1
-	-	9	12	5	5	4
-	-	2	2	2	2	1
1	-	1	8	-	-	-
-		1	-	-	-	-
-	2	-	1	-	-	-
-	1	1	2	1	-	-
2	-	1	1	-	-	-
-	1	-	-	2	-	-
1	2	2	-	3	-	-
-	-	2	-	4	-	-
1	1	-	3	1	-	-
-	-	-	4	-	3	3
-	-	8	14	7	17	2
1	1	2	3	1	2	-
-	-	1	2	1	1	1
-	-	-	-	1	1	-
1	-	-	-	-	-	-
-	1	-	-	-	-	-
Grassland		Forest edge			Forest	
Apiario G	Movene G	Mandimbe E	Mbilambi E	Movene E	Mandimbe F	Mbilambi F
-	-	7	5	6	12	5
-	-	-	-	1	-	-
-	-	5	1	2	2	2
-	-	1	9	5	4	1

-	1	-	-	1	-	-
-	1	-	1	-	-	-
-	5	1	1	-	-	-
-	-	-	5	-	-	-
1	-	-	-	-	-	-
6	1	-	1	2	-	-
-	-	-	-	1	-	-
3	4	-	-	-	-	-
1	2	-	1	-	-	-
2	1	-	-	-	-	-
1	3	-	-	-	-	-
4	-	-	1	-	-	-
-	-	-	1	-	-	-
-	-	-	4	-	-	-
-	-	-	-	-	-	4
-	2	1	-	-	-	-
-	1	-	-	-	-	-
-	-	-	-	2	-	-
1	3	-	-	-	-	-
Grassland		Forest edge			Forest	
Apiario G	Movene G	Mandimbe E	Mbilambi E	Movene E	Mandi mbe F	Mbila mbi F
2	4	-	-	1	-	-
-	-	2	-	-	-	-
-	1	1	-	-	-	-
1	3	-	-	-	-	-
-	-	-	-	1	-	-
-	-	-	-	1	-	-
-	-	-	-	1	1	
-	1	-	-	-	-	-
-	1	-	-	-	-	-
1	2	2	-	-	-	-
-	-	-	-	1	-	-
-	-	3	3	1	-	-
-	-	-	-	-	-	2
2	-	-	3	1	-	-
1	1	2		3	1	-
1	2	1	1	3	-	-
-	-	3	3	-	-	-
-	2	1	-	2	-	-

-	-	-	-	1	-	-
-	-	-	3	-	-	-
-	-	1	1	-	-	-
3	1	-	-	-	-	-
1	-	-	1	-	-	-
1	2	1	3	-	-	-
-	-	1	4	-	-	1
-	-	-	-	-	1	-
-	-	1	-	-	-	-
Grassland		Forest edge			Forest	
Apiario G	Mov ene G	Mandimbe E	Mbilambi E	Movene E	Mandi mbe F	Mbila mbi F
-	-	-	1	-	1	1
-	-	-	1	-	-	-
-	-	1	2	-	-	-
-	-	-	1	-	-	1
-	-	-	6	1	1	2
-	-	1	-	1	-	-
-	-	-	2	-	1	2
-	-	-	-	1	-	-
-	1	-	-	-	-	-
-	-	-	1	-	-	1
-	-	-	1	-	2	-
-	-	1	3	-	1	1